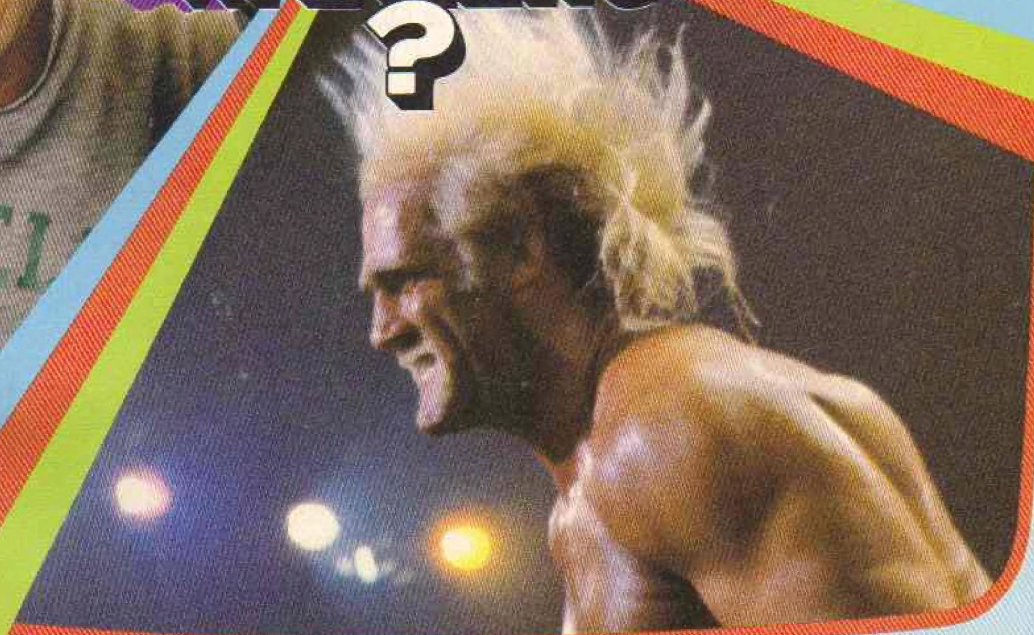
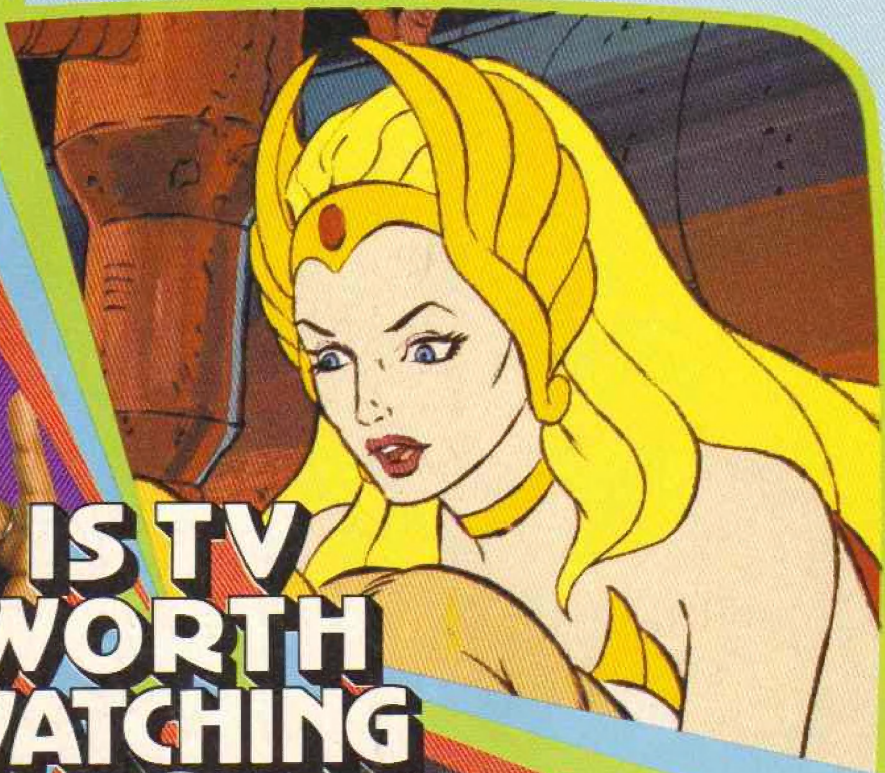
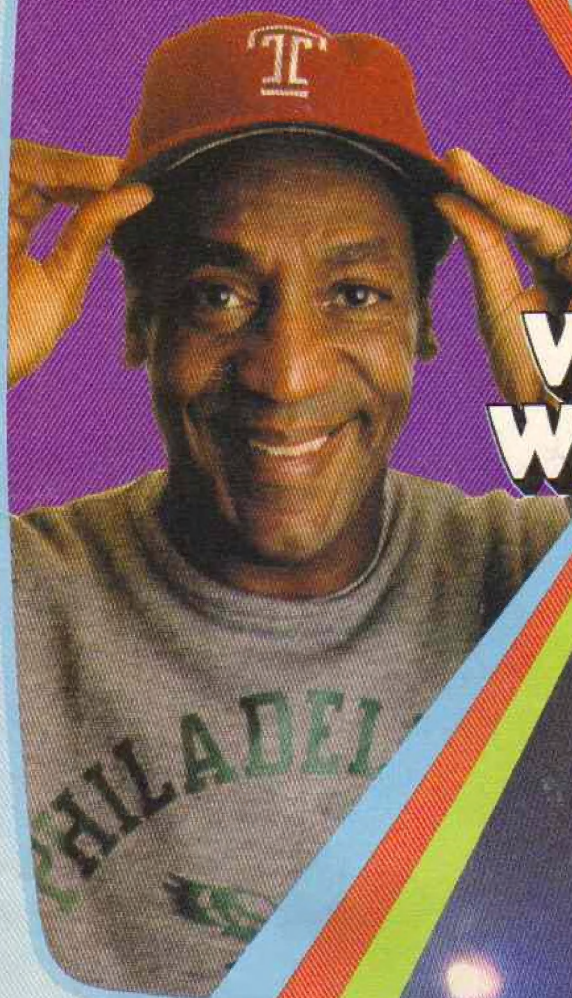


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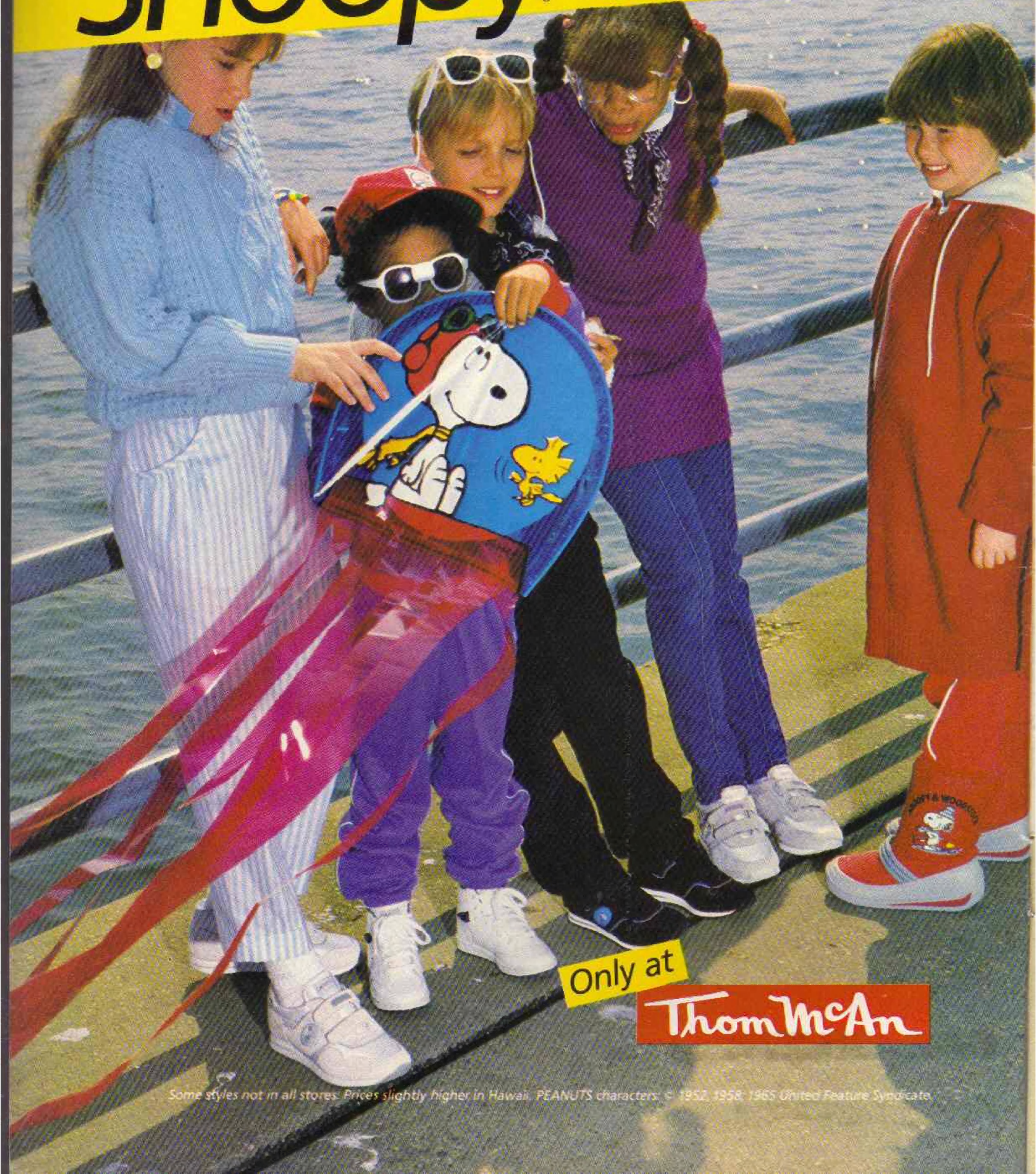
**IS TV
WORTH
WATCHING
?**



Also Inside:

- Chimp Talk • Lightning!
- ENTER Computer Section

Introducing **Snoopy Shoes**



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Some styles not in all stores. Prices slightly higher in Hawaii. PEANUTS characters: © 1952, 1958, 1965 United Feature Syndicate.

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3-2-1-Contact



Page 12



Page 22

Page 2



Page 14



Featuring This Month

- 4** Choosing Channels:
What's TV Doing
to You?
- 8** TV Talk: Kids Talk Back
to the Tube!
- 14** A Champ of a Chimp:
Teaching Kanzi to
Communicate
- 18** Busy Bodies: The Eye
- 22** Zap! CONTACT Looks
at Lightning
- 25** 3-2-1 CONTACT
TV Guide
- 29** Future Poll

ENTER: The High-Tech World of Computers

- 31** Word Jumble
- 32** Newsbeat
- 33** The Slipped Disk Show
- 34** Reviews
- 36** Basic Training

Plus Our Regular Departments

- 2** TNT: Tomorrow's News
Today
- 10** Factoids
- 12** Any Questions?
- 26** The Bloodhound Gang
- 38** Extra!
- 40** Did It!

Cover Photos: Credits on Did It! Page



PHOTO © ANTHONY BANNISTER/ANIMALS/STAMPAUS

Quiet As An Elephant

Do elephants tell secrets? Probably not. But they do whisper. Scientists say elephants "talk" in sounds so low that human ears don't notice them.

These secret sounds start way down in an elephant's throat. They rumble up and vibrate a soft spot in the elephant's head. The soft spot acts like a loud-speaker, sending low sounds through the air.

Elephants can grumble and snort, so why do they make sounds that are so hard to hear?

Low-frequency sounds may help elephants stay in touch when they're far apart. These sounds travel farther than sounds humans can hear. Scientists are studying elephant herds to see if low sounds are used for long-distance calls, elephant-style.

You can't hear the secret sounds, but you can "see" them the same way scientists do. Next time you visit a zoo, look for a fluttering spot on an elephant's forehead. "It looks like a bowl of Jell-O when you shake it," says Bill Langbauer, one of the scientists studying the new discovery.

We Won! We Won!

Not that we like to brag (well, we do like to brag) but you're holding an award-winning magazine in your hands. 3-2-1 CONTACT won this year's National Magazine Award for General Excellence—no kids' magazine has ever done that!

We'd like to thank you for having helped us win it. You've let us know what you like to read about in CONTACT. We took your requests and put them on the pages of the magazine. Without you, we never would have won. THANKS!

ILLUSTRATION © PAUL CLIMMINGS

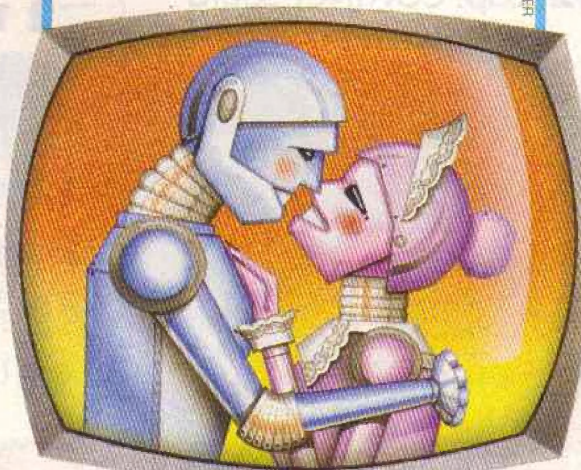


Disk Drive Drama

Tired of boring TV shows? Think a computer could do better? Michael Lebowitz, a computer scientist in New York City, is teaching computers to think up TV soap operas.

The computer program can't write scripts yet, but it's great at inventing characters and stories. In the future, it might grow into a cross between TV and computer games—"like your own personal soap opera," says Michael.

ILLUSTRATION BY STEPHEN BERGER



You Old Windbag

If you know someone who has been holding her breath for a hundred years—quick! Call the scientists at Los Alamos National Laboratory. They need the old air.

Meanwhile, they're collecting tiny bits of air sealed inside old hollow buttons, binoculars and telescopes.

Believe it or not, the air around us has changed in the last 100 years, ever since people started using coal, oil and gasoline for energy. When these fuels burn, they add carbon dioxide to the air. To know how things used to be, scientists want to examine old air.

But why look in tiny buttons instead of big old antique jars? Jane Poths, a Los Alamos scientist, explained the reason to CONTACT.

"The first thing people do when they get an interesting old bottle is open it," she said. The old air flies out—and science detectives have to work a little harder.

Under Fire

You're battling a fierce forest fire. You're in an area free of plants, so flames can't get you. But it's hot, and there's not much air.

That's when you open the pack on your belt. In half a minute, it unfolds into a three-foot-high tent. Inside the tent, you're protected by fiberglass, aluminum foil, and a cushion of air. You're hot—but safe.

In one fire last year, these tents saved the lives of 73 firefighters. Now *that's* a life-saving invention.

On The Rocks

Who says there's no pole at the South Pole? Meet two teens who have actually seen it—on their adventure to Antarctica.

Robin Moyle, from Scarsdale, NY, and Karen Prentice, from Port Orchard, OR, were chosen by the Girl Scouts to join scientists in a research expedition. They're both science whizzes and experienced backpackers. Robin and Karen spent eight weeks in the icy wilderness—and brought back this very cool photo.

PHOTO COURTESY OF GIRL SCOUTS OF THE USA

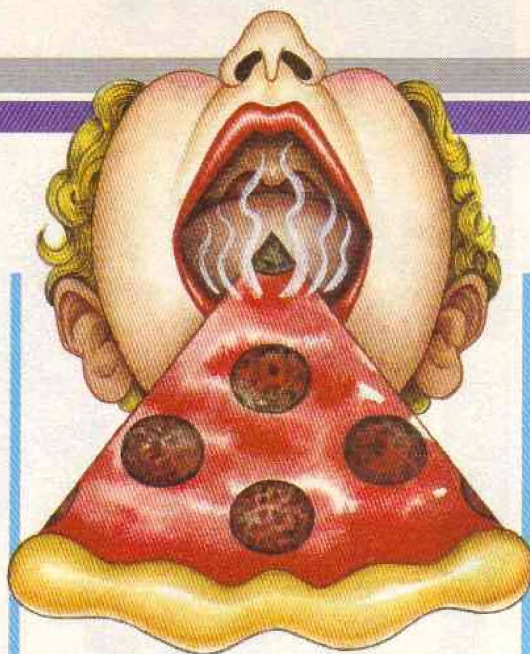


ILLUSTRATION BY JENNIFER SKOPP

Pizza Science

Ouch! Why do so many nice hot pizzas burn the roofs of so many nice mouths? Dr. Harold Morowitz, a scientist at Yale University in Connecticut, decided to figure it out.

To get hot, foods soak up heat energy. Pizza crust soaks up less heat than the melted cheese on top. That's because the crust is full of little air bubbles.

Since it has less heat energy inside, the crust cools down sooner than the cheese. So the crust may be cool enough to hold, while the cheese is still steaming. You take a big bite and—ouch!

What got Dr. Morowitz wondering? "I've eaten lots of pizza," he told CONTACT. "I've burned my mouth lots of times."

A Better Duck

The future is about to slip into your pocket. By the middle of next year, you're going to be carrying a new kind of dollar bill.

The new bill won't look different at first glance. But when you hold it up to the light, you'll see a strip of tiny little letters reading "USA ONE USA ONE USA ONE" (or "TWO" or "FIVE" on bigger bills.)

These won't be the only tiny letters on the bill. All around George Washington's picture, you'll be able to read the words "United States of America"—if you get yourself a good magnifying glass.

Why the high-tech bills? To stop high-tech counterfeiters. Modern copying machines are able to make decent photocopies of today's money. But copiers can't even see the new bills' hidden "USA ONE" strip or the tiny words surrounding the picture.

Tiny letters may be the latest word in paper money, but they won't be the last. The government is looking into holograms—three-dimensional photographs—as a super-high-tech counterfeit foiler.

So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science stories from the news that have to do with the future. (Be sure to tell us where you heard the story.)

Send to: TNT/3-2-1

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New York, NY 10023

"The Cosby Show" is fun—
and it makes
you think.



NBC PHOTO BY TIM LEWIS JR.

Choosing Channels

by Russell Miller



PHOTO CREDIT ON DID IT PAGE

"Turn off the TV and do your homework!"

Sound familiar? If you're an average American kid, you watch about 25 hours of TV every week. That's about as much time as you spend in school—not counting lunch and recess.

Is TV so bad? Folks in Farmington, Connecticut think so. Since 1984, they've been turning off their sets for the whole month of January. Instead of watching TV, they do arts and crafts, go to concerts and puppet shows—and read.

On the other hand, TV-watching is homework for 21,000 kids in Queens, New York. Teachers there say TV gets kids more interested in school.

Most people agree that viewers learn as much

Left: He-Man's a star and a toy, too. Is his show a commercial?





NBC PHOTO BY R. M. LEWIS JR.

Kids love "The A-Team." Does it make them pick fights?

Do people believe TV that much? Dr. Howard Gardner is a psychologist who has studied the way preschool children watch TV. He says that by the time kids are four or five, they know the difference between TV and real life. But even though people know TV isn't real, Dr. Gardner says it can change the way they think.

"The ways they think about the world are going to be influenced by TV," Dr. Gardner told CONTACT.

Commercials depend on TV's influence. Some people say ads make kids want toys, candy and sugary cereals they wouldn't want otherwise. Critics are especially upset by cartoon shows about toys, like "Go-Bots" and "He-Man." These shows are made with help from the toy-makers. Critics say they're half-hour-long commercials.

Wham! Dam! Doom!

Cartoons also come under fire for being too violent. So do detective shows, adventures like "Knight Rider" and even music videos that show people getting hurt. By the time kids finish high school, they have seen an average of 18,000 murders on TV.

Dr. Thomas Radecki, a well-known critic of violent movies and TV, says violent TV hurts viewers: "Kids no longer think it's so bad to hit another kid at school. They're more likely to lose their temper, to call names, to get into a fight. They don't notice that effect on themselves."

Most research supports Dr. Radecki. But TV networks disagree. They say the violence on TV shows for kids can't hurt. Take "The A-Team" for example. It's make-believe, says NBC-TV's Ralph Daniels: "Nobody gets hurt and everybody walks away."

Critics argue that shows like "The A-Team" teach that real violence doesn't hurt. "It would be good for the American public if Mr. T. ➡

WHAT'S TV DOING TO YOU?

as they laugh. But what do kids learn from TV? That's what makes people wonder and worry.

A Dig 'Waist' of Time?

Doctors in Massachusetts say TV might make you fat! No kidding—the more kids watch TV, the fatter they are.

It doesn't take much energy to watch "Brady Bunch" reruns. And heavy TV-watchers often munch as they watch—on high-calorie snacks that build fat.

TV itself may encourage pigging out. Drinks and sweets are mentioned two or three times during the average show. Few TV characters are fat, though. Some doctors think that sends an unhealthy message to viewers. Kids—and adults—may think, "If they can eat and not get fat, so can I!"



PHOTOS: NICK KOUJIS

were to be killed on 'The A-Team,' " says Dr. Radecki. "It would be more real."

The Real Things

Dr. Radecki isn't the only one who thinks TV should be more real. "There aren't enough different kinds of kids in different kinds of situations on TV," says Sally Steenland of the National Commission on Working Women.

The Commission found that life on TV comedies is nothing like real life. People hardly ever have money worries. Working moms never worry about day care for their kids. And TV parents hardly ever yell at their kids or tell them what to do.

Ms Steenland says TV would be more fun if TV people were more like real people. "People look for pieces of themselves on TV," she told CONTACT. "It helps us deal with our own problems. It helps us grow."



"Don't you understand? This is life, this is what is happening. We can't switch to another channel."

DRAWING BY ROBERT DAY © 1970 THE NEW YORKER MAGAZINE, INC.

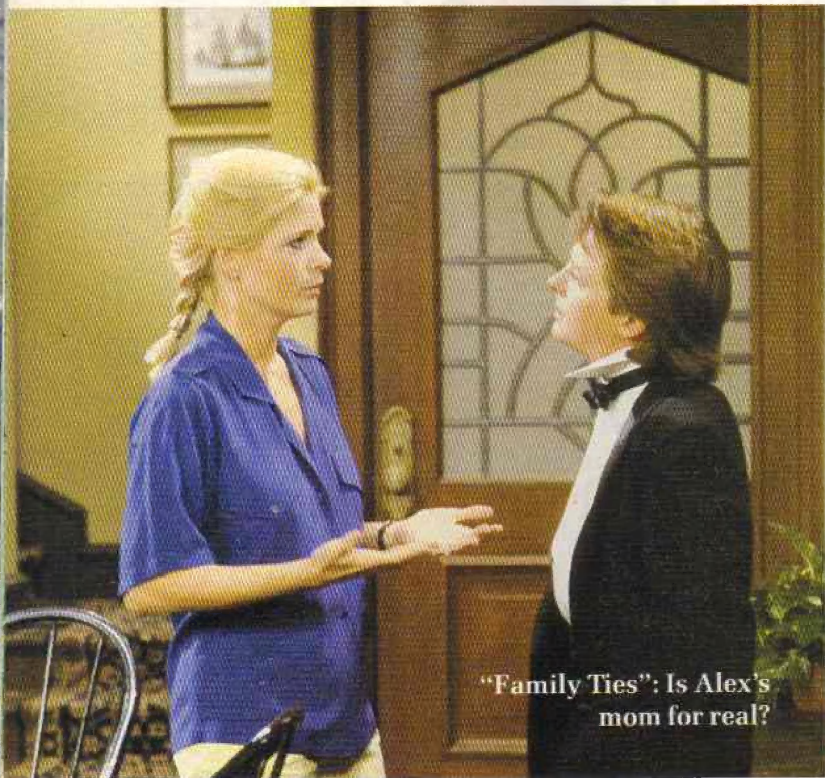
Programs like "The Cosby Show" and "ABC Afterschool Specials" try to help kids think about problems. Shows like "Main Street" present kids'-eye views of the real world. Experts say that's fine. But they say it isn't enough.

If You Can't Beat 'Em...

Kids need to think about the TV they watch, say the experts—how much they watch and what shows they choose. That's why the kids in Queens, New York—and thousands of other schools around the U.S.—are studying TV-show scripts before the shows are broadcast. "You can let TV work for you," says Lydia Greenblatt, who runs the Queens TV study program.

"It's not good if a person is a television junkie, even if he's watching Shakespeare," says Dr. Gordon Berry, a psychologist who studies kids and their TV habits. "Children need to be wise consumers of television."

Which brings us back to Farmington, Connecticut, where TVs go off during January. Nancy DeSalvo, the turn-off's organizer, says Farmington families have become choosier about TV. That, she says, helps with the biggest TV problem of all—wasting time while you're glued to the tube: "You just keep watching to see what's coming up the next half-hour." **620**



"Family Ties": Is Alex's mom for real?

NBC PHOTO BY GARY NALL



PHOTOS: NICK KOLIS



All American,

All Girl...

Eva JoiaTM Jeans

Eva
JoiaTM
GITANO

TV TALK



Kids Talk Back to the Tube!

After CONTACT talked to grownup experts about whether TV is good or bad for kids, we decided to find out what some real experts—kids!—think.

We talked to Nadine Corrado, 11; Najeeb Harb, 11; Thomas Ruh, 12; Marc Payne, 9; Kismari Andrade, 8; Mercedes Howell, 9; Enrique Roldan, 9; and Celestino Collado, 12. They're in fourth, fifth, and sixth grades at Public School 187 in New York City. Everyone of them watches three or more hours of TV every day.

We'll introduce our panel in a moment, but first—let's hear a word from our sponsor—you! We'd like to hear your thoughts about TV. We'll print as many as we can in a future issue. Send your comments to:

TV Talk
3-2-1 Contact
P.O. Box 599
Ridgefield, NJ 07657

And now, back to the show.

CONTACT: Are the people on TV shows like real people you know?

Najeeb: No. They have too much fun. Like on "The Brady Bunch," only one kid has a problem at a time. All the others just try to help out. It's not real.

Marc: Sometimes when my family watches "The Cosby Show," they find out that some of their problems are similar to the ones on TV.

Nadine: I watch "The Cosby Show" because it's funny, not because they have problems. They hardly ever have any hard situations to solve.

Thomas: Everybody on TV has time to help somebody. But in your own house, nobody has time to do so much for other people.

CONTACT: If you could live with a TV family, which one would it be?

Enrique: "Different Strokes." I'd like to be rich in a rich house. And I'd like Arnold to be my brother. He's funny.

Marc: "Family Ties"—because they usually have problems that the kids can solve themselves.

CONTACT: What do you think of commercials

Enrique



Kismari

Thomas



Marc



ILLUSTRATION BY JO LYNN AL CORN

on TV?

Celestino: When they show a game on TV, everybody looks so happy. But if you have the real thing in your house, it's not so much fun. You get tired of it.

Mercedes: On TV, they make it look like so much fun, but when you really buy it, it's not that much fun for you.

CONTACT: Do you think there's too much violence on television?

Thomas: They don't really have that much violence on regular TV channels. It's more on pay cable systems.

Mercedes: What's on TV really happens sometimes. If somebody's bothering your brother or your sister, you go up and say "Leave my brother alone." Sometimes it turns out one person gets beat up and hurt.

Nadine: If someone watches a violent movie and the people in the movie get away with it, people who watch it think "Oh, this girl is bothering me and I'm going to beat her up—and I won't get caught."

Marc: When we see cartoons that have

violence, sometimes my friends say, "It's a good show because somebody got beat up or somebody got killed."

Celestino: In cartoons, I've never seen violence. In "G.I. Joe," when they blow up a jet airplane, they always put them in a parachute first, and they drop out.

CONTACT: What do you think of TV news?

Nadine: It's interesting and it makes sense. They just show the facts and not make believe. If it's the news, they should show something real and say something real. That's what they're doing.

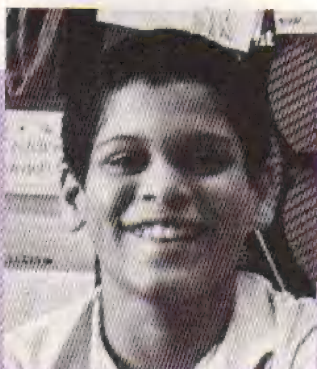
Najeeb: On the evening news, I don't really watch the facts. I just watch the sports.

CONTACT: All in all, what do you think of television?

Mercedes: It's good. It makes you laugh and it makes you cry. It makes you do all sorts of things, and that's a good experience. You can explore the way you live.

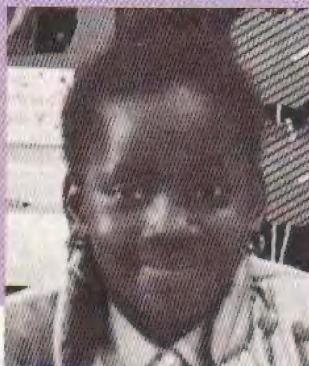
Kismari: There are a lot of programs that keep you informed about things you want to know. I'm just glad TV was invented. **END**

Nadine



Celestino

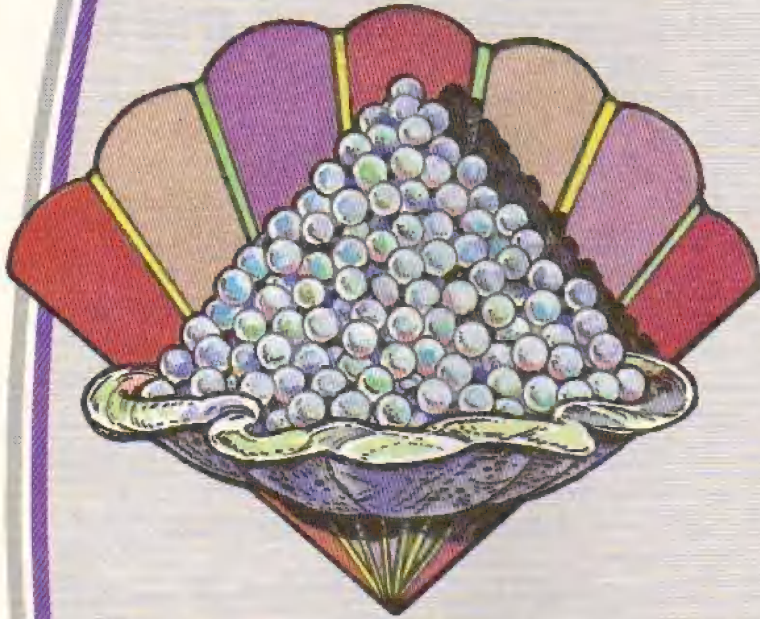
Mercedes



Najeeb

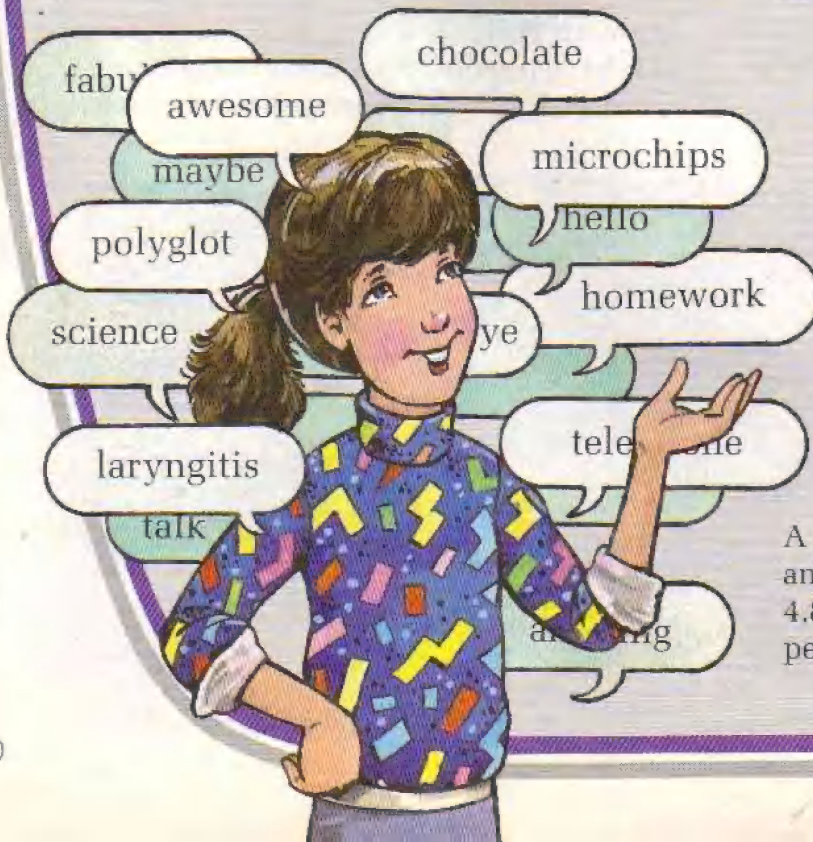
Factoids

As many as 100 pearls
have been found
in a single oyster.

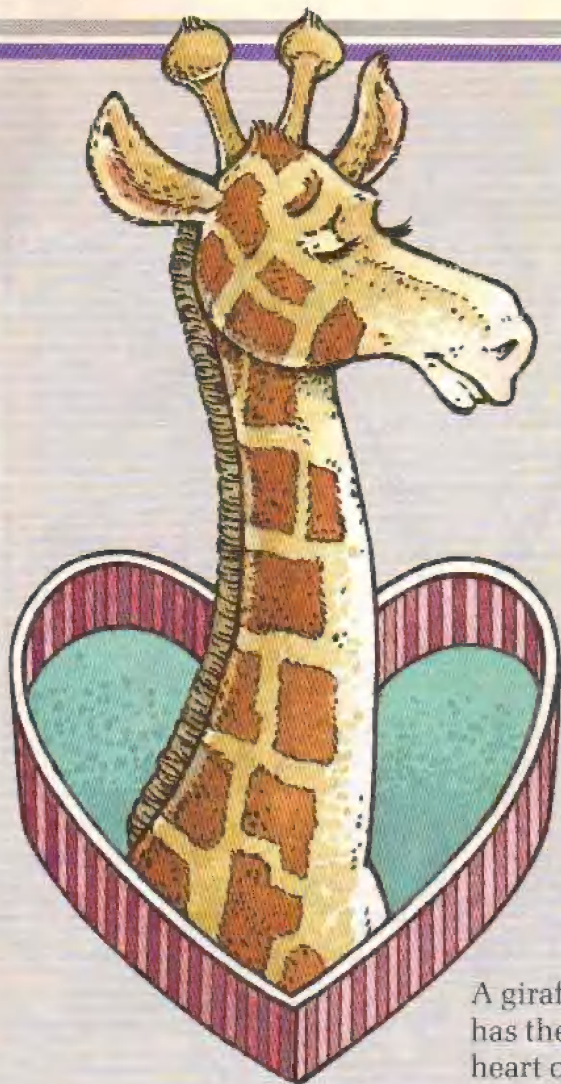


A frog must close
its eyes to swallow.

It took $2\frac{3}{4}$ hours
for photos from
Voyager 2's flyby of
Uranus to reach Earth.
That's a distance
of almost 2 billion miles.



A person speaks
an average of
4,800 words
per day.



A giraffe
has the largest
heart of all
land animals.



ILLUSTRATIONS BY JOHN NEZ

One out of 20 people dream in color.



It takes four hours
to hardboil an ostrich egg.

Any Questions?

by Marc Derman

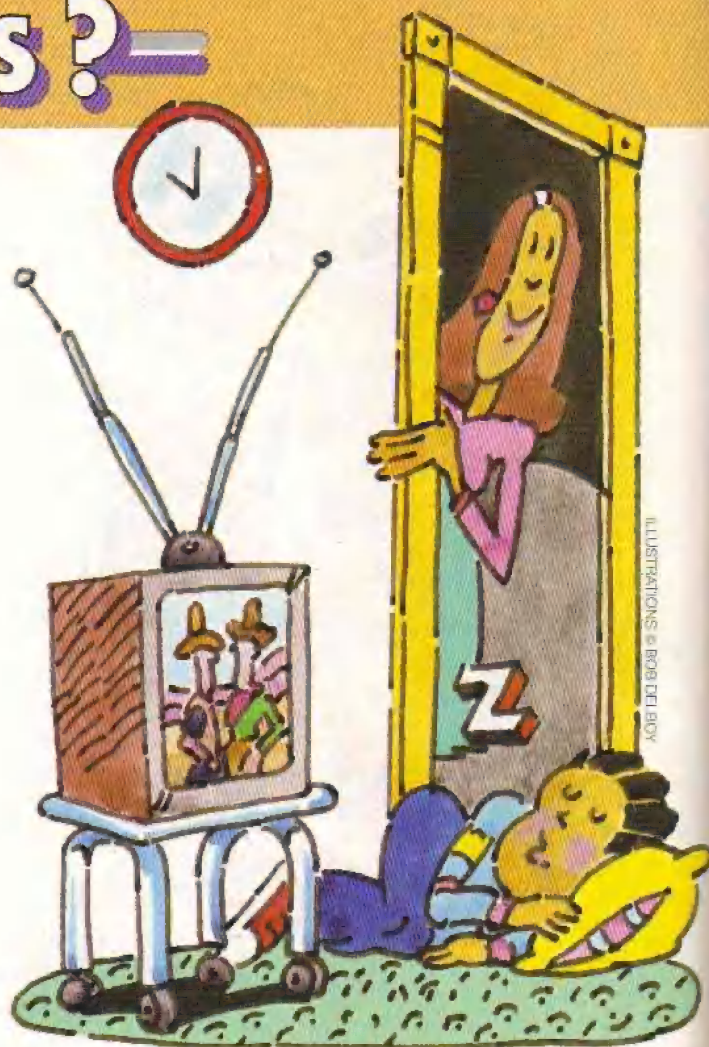
Why do kids need more sleep than adults? Your parents get to stay up late, but you have to go to bed at 9:00. It doesn't seem fair. But the fact is, your parents need less sleep than you. Adults need to sleep only seven or eight hours a night. Kids may need to sleep up to 12 hours.

The reason? Kids' brains tire out faster than grown-ups. Sleep slows down your brain and lets it rest.

Sleep also gives your body time to grow. Most of the growing you do takes place while you're asleep. Since adults are already grown, they need less sleep.

In general, adult women need more sleep than men, but most grown-ups can adjust to less than seven or eight hours of sleep if need be. Doctors and nurses, for instance, can work for days on just a few hours of sleep. After a while, though, they have to get a good long snooze.

Question sent in by Conor Donnelly, Minneapolis, MN



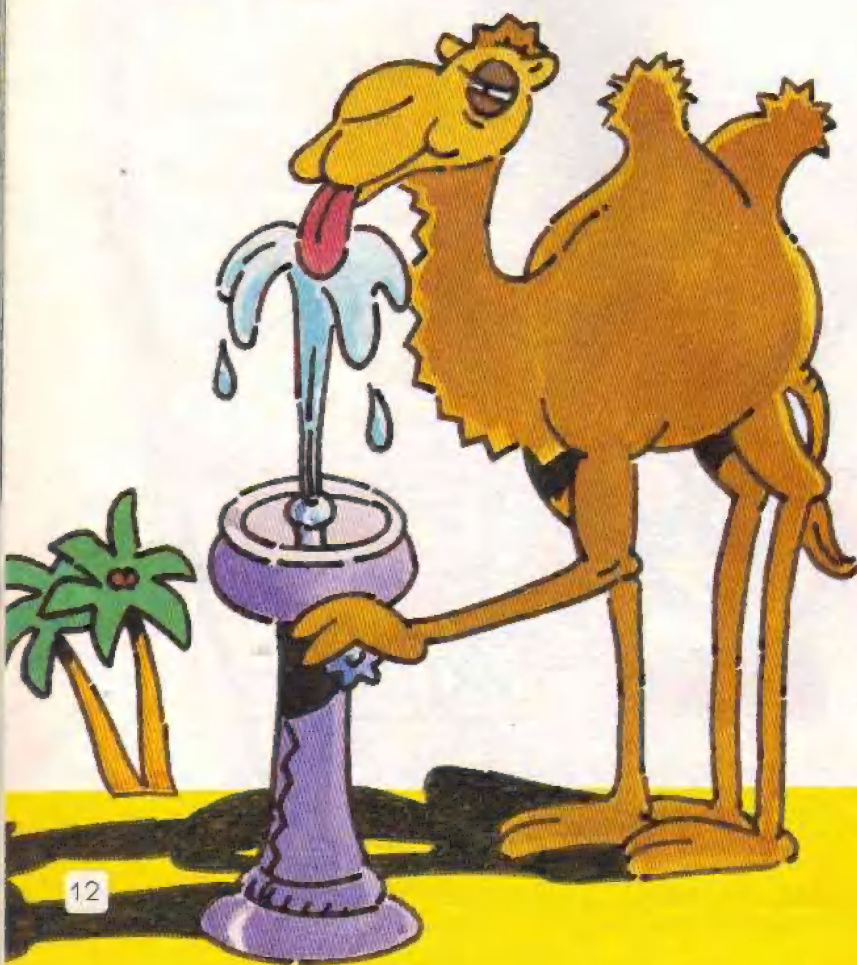
Why do camels have humps?

If you carry your lunch to school in a backpack, you have something in common with camels. Camels store food in the humps on their backs. Actually, they store fat. When there's not much food around during long treks through the desert, camels use the fat in their humps to live on—or just to keep them going.

What happens to camels' humps when they've used up the fat inside? On Arabian camels, which have one-hump, the hump simply gets smaller. On Bactrian camels, which have two humps, the empty humps become floppy, like basketballs with no air in them.

In a pinch, camels can turn the fat in their humps into water. That's one reason why camels can go more than two weeks without taking a drink. Of course, after two weeks they're awfully thirsty. Then they can drink 25 gallons of water in around 10 minutes. (Don't try that yourself!) Bottoms up!

Question sent in by Robert Carroll, Annandale, VA



Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
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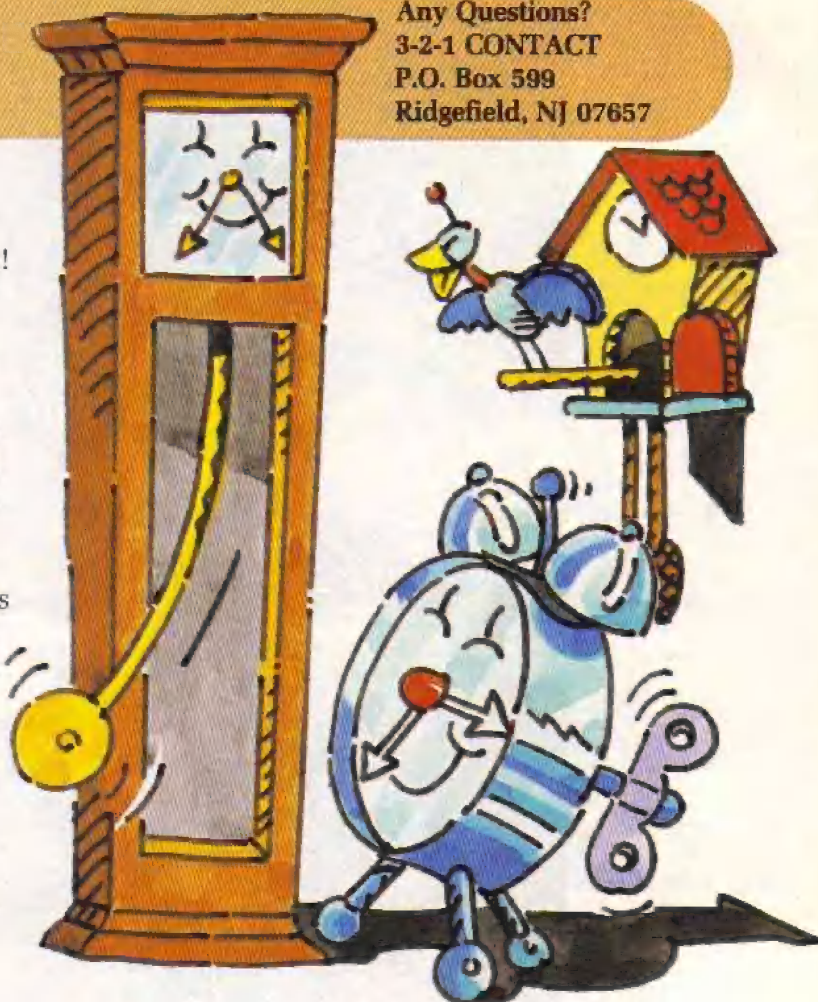
How does a clock work? What has two hands but no fingers? A clock, of course! And that's not all clocks have.

They also have teeth. Inside every clock, there's a set of gears—wheels with teeth. When one of the gears turns, it pushes another. One gear is exactly the size and speed that makes the minute hand go around a dial every 60 minutes. Another gear makes the hour hand go around every 12 hours.

But something's got to make the wheels turn, right? Right! Clocks get their power from all sorts of things. A hanging weight or a swinging weight, called a pendulum, can make a clock go. A wound spring powers many watches.

In other watches, a battery causes a piece of quartz or a tin metal fork to vibrate. This creates electricity that turns the wheels. Other electric clocks just plug into the wall. Last but not least are digital clocks—they're actually tiny computers programmed to count the hours, minutes and seconds.

Question sent in by Ryan Burns, Peoria, IL



Why do we get chapped skin?

If your face feels like sandpaper, and your lips are like a Gila monster's back, you may have chapped skin.

Your skin becomes chapped because its top layer loses too much water. If the weather is very dry, the air draws moisture out of your skin, making your skin cells dry up.

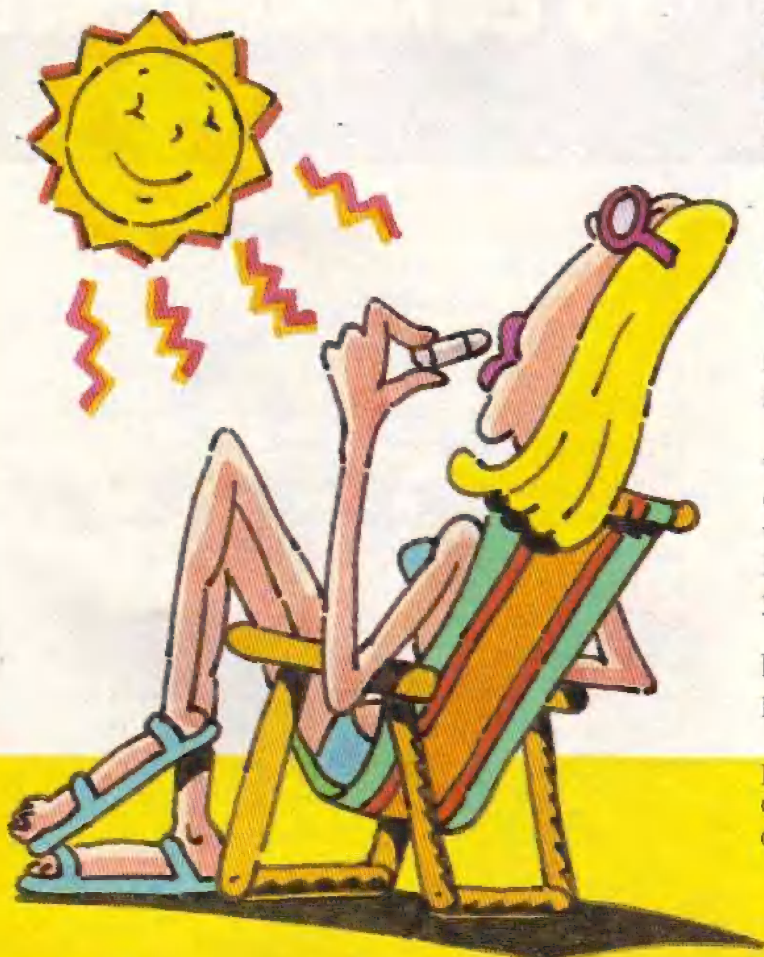
In everyday life, some skin cells dry up and flake off. With chapped skin, more cells than normal dry up, and your skin may look cracked.

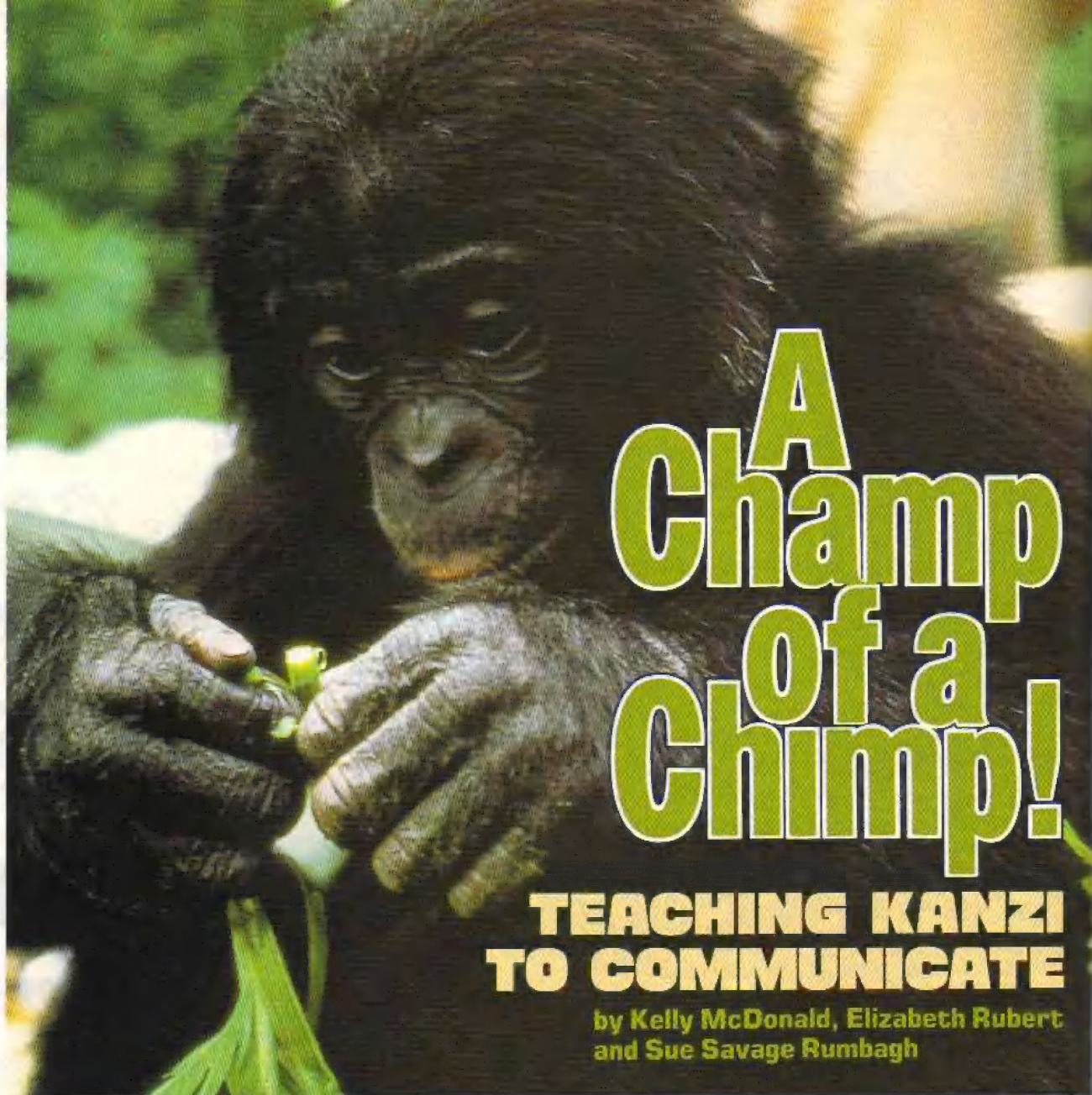
Have you noticed how your lips get chapped when you lick them in cold, dry weather? As the dry air draws the saliva from your lips, it takes with it some of the moisture in the skin of your lips too. The same thing will happen if you lick your lips in a hot, dry desert.

Chapped skin hurts because your nerves become more exposed. They don't have the extra protection those living moist cells provide.

One reason why lip balm works against chapping is that it completely covers the outer layer of skin. So moisture can't escape.

Question sent in by Pamela Bell, Hope, MI





A Champ of a Chimp!

TEACHING KANZI TO COMMUNICATE

by Kelly McDonald, Elizabeth Rubert
and Sue Savage Rumbagh

Did you ever wish you could talk to the animals? Remember Doctor Doolittle? Or The Jungle Book? Those were stories about people who could talk to animals.

Of course, animals don't have languages the way humans do. But they do communicate with each other by using sounds and movement. And we "talk" to them with gestures and sounds. How much can we really "talk" to animals? More and more scientists are trying to find out.

Near Atlanta, Georgia, some scientists are teaching a kind of language to a pygmy chimpanzee named Kanzi. CONTACT asked researchers Kelly McDonald, Elizabeth Rubert and Sue Savage Rumbagh to tell us about Kanzi.

When you first see Kanzi, he doesn't look special. He's a small chimpanzee about three feet

tall, who likes to climb trees, eat bananas and play games. But Kanzi is different than most chimps, because Kanzi is learning a language.

At the Language Research Center, we are teaching Kanzi to use symbols to communicate with humans and other chimpanzees. These symbols are called *lexigrams*. Each lexigram stands for one word. For example, a diamond with a circle around it stands for BANANA. A straight line stands for RAISIN. A square stands for HUG.

The lexigrams are on a special keyboard we made for Kanzi. He touches the lexigrams to tell us what he wants. For example, if he wants an apple to eat he says "apple" by touching the APPLE lexigram. Kanzi also uses the lexigrams to tell us things. For example, he might touch the WATER lexigram to tell us that he is going to

get a drink of water.

We are teaching Kanzi with lexigrams because chimps' vocal cords cannot form words. But Kanzi does make sounds which we call *vocalizations*. He's especially noisy when he's happy, or when he's eating something he likes. In the wild, chimpanzees use these noises to communicate. For example, they will call to each other if they get separated.

A Rare Breed

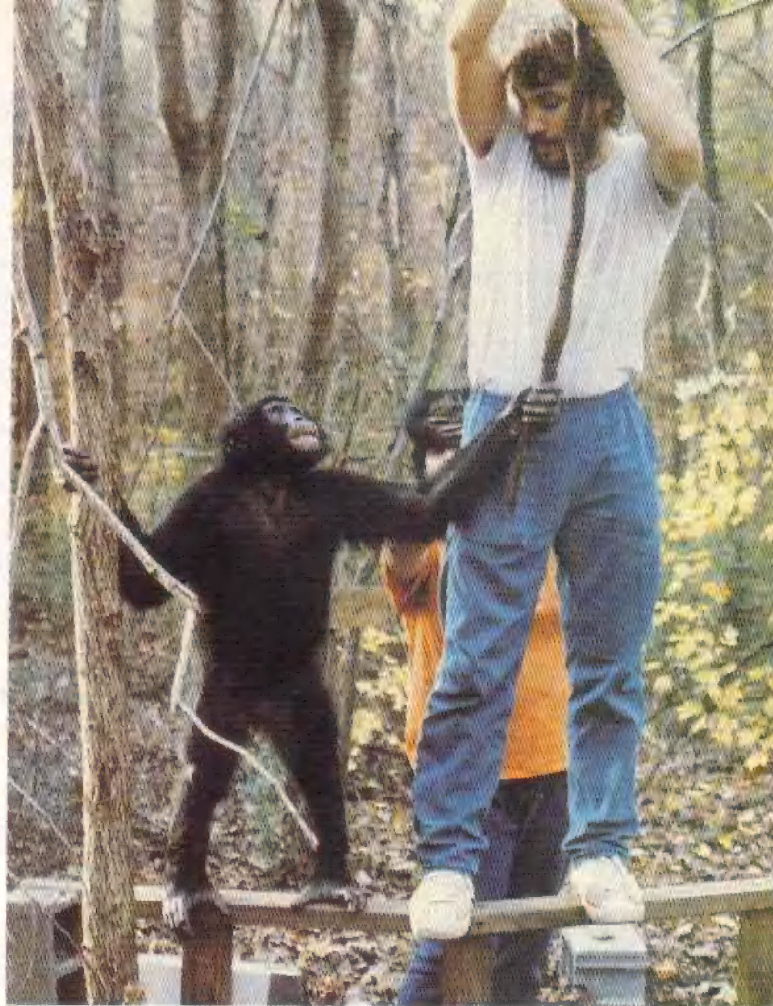
Kanzi was born on October 28, 1980 at the Yerkes Field Station in Lawrenceville, Georgia. His mother, Lorel, lived with a group of other pygmy chimps. Another adult female chimp, named Matata, was so interested in Kanzi that she adopted Kanzi as her own.

Pygmy chimps are not just small chimpanzees. They are a different species of ape, like gorillas or orangutans. Pygmy chimps are very rare. Very little is known about them. Some scientists think that pygmy chimps are more closely related to humans than other apes. They seem to be more intelligent than common chimps.

Primary School Primate

We want Kanzi to learn to use lexigrams, but we don't *teach* them to him. Instead, we just use the lexigrams to communicate with each other ➡

Below: Kanzi points to the lexigram for BAD. That means he is thinking of misbehaving.



Above: Kanzi and a teacher get into the swing of things.

Below: These are some of the lexigrams Kanzi uses to communicate with humans and other apes.



PHOTOS: LANGUAGE RESEARCH CENTER, GEORGIA STATE UNIVERSITY





Above: Kanzi uses the lexigram keyboard to ask Kelly McDonald for some eggs.

Below: Like all apes, Kanzi uses gestures to communicate. He is pointing to show where he wants to go.



other and to talk to him. Soon Kanzi was using the lexigrams himself. This is the way human babies learn.

For example, each night Kanzi likes to make a large nest out of blankets to sleep in. When we put him to bed we would touch the BLANKET lexigram and say, "Let's get some blankets for our nest." Then we would go and get some. Soon, Kanzi was touching the BLANKET lexigram when he was ready to go to bed.

Kanzi always wants a glass of water before going to bed so he would touch the WATER lexigram to ask for some. One evening he was told ICE WATER and was brought a glass of ice and water. Kanzi enjoyed it so much that the next night he touched the ICE and WATER lexigrams to ask for ice water himself.

A Day With Kanzi

Kanzi likes to do many things that five-year-old humans like to do. He loves to play games like tag and hide-and-seek. He likes playing with balls, too. One of his favorite games is keep-away. He is very good at it.

Kanzi also loves to go outside and climb trees in the woods that surround our lab. In the summer he goes swimming in the large children's pool we have for him. On a hot day, he cools off by putting his head under water.

But as much as he would like to, Kanzi does not get to play all day long. For a few hours each

Right: Mulika and Kanzi playing tag.

Below: On a hot summer day, Kanzi cools off in his swimming pool.



PHOTOS: LANGUAGE RESEARCH CENTER, GEORGIA STATE UNIVERSITY

day he stays inside for his work session. This is when we test him to see what he has learned. He gets to eat during his tests, so he has fun taking them!

Kanzi eats mostly fruits and vegetables. Bananas, apples, mushrooms and celery are among his favorites. But he also likes meat such as hamburgers and hot dogs. And Kanzi also likes junk food like M&M's, Coca-Cola, and potato chips. (Although he's tasted new Coke and Classic Coke, he hasn't told us which he likes better!)

After his work is done, Kanzi also gets to watch videotapes on his TV. One of his favorites is a movie about cavemen called "Quest For Fire." To ask for it, Kanzi presses two lexigrams, FIRE and TV. He also likes watching "Planet of the Apes," "King Kong" and other movies with animals in them.


Learning About Learning

When Kanzi was 4 years old, Matata gave birth to a new baby named Mulika. Mulika has joined Kanzi in learning lexigrams and Kanzi often uses the keyboard to "talk" with her. For example, he uses it to ask her to play chase.

Eight different people work with Kanzi and Mulika each week. It is not always easy, but it is fun and very rewarding, especially when Kanzi and Mulika learn a new lexigram.

Kanzi and Mulika are teaching us a lot about pygmy chimps. They are also teaching us about human beings. The way chimps learn is very similar to the way humans learn. So we can use our experience with the chimps to help people.

For example, there are human children who are unable to learn language the way most children do. Perhaps by studying the use of lexigrams, we may be able to develop better methods for teaching language to these special children.

Kanzi is still a young chimp. Someday, he will be close to five feet tall and weigh about 120 pounds. And he keeps on learning. How much language can he learn? Together with Kanzi and Mulika, we are going to find out! 

The Eye

by Jonathan Schwartz

The best way to find out where you are is to open your eyes and take a look. If you want to know what's on TV, you take a look. One of the best ways to learn about anything is by using your eyes.

Meet Your Eyes

Take a peek at your eyes. See the black spot in the center? That's your pupil. It's really a hole in your eye that lets in light.

Around the pupil is a circle of color. In most people it's brown, though it can be blue, too. This is your iris (EYE-riss). The iris works with your pupil to make sure the right amount of light gets into your eye. Too much or too little light and you can't see a thing.

Oh Say Can You See?

How can you see if there is a car coming when you are about to cross the street? Of course, you look both ways. But how do your eyes actually see the car?

Below: A picture is focused on the back wall of your eye. Rods and cones send a message to your brain, which turns the picture right-side up.

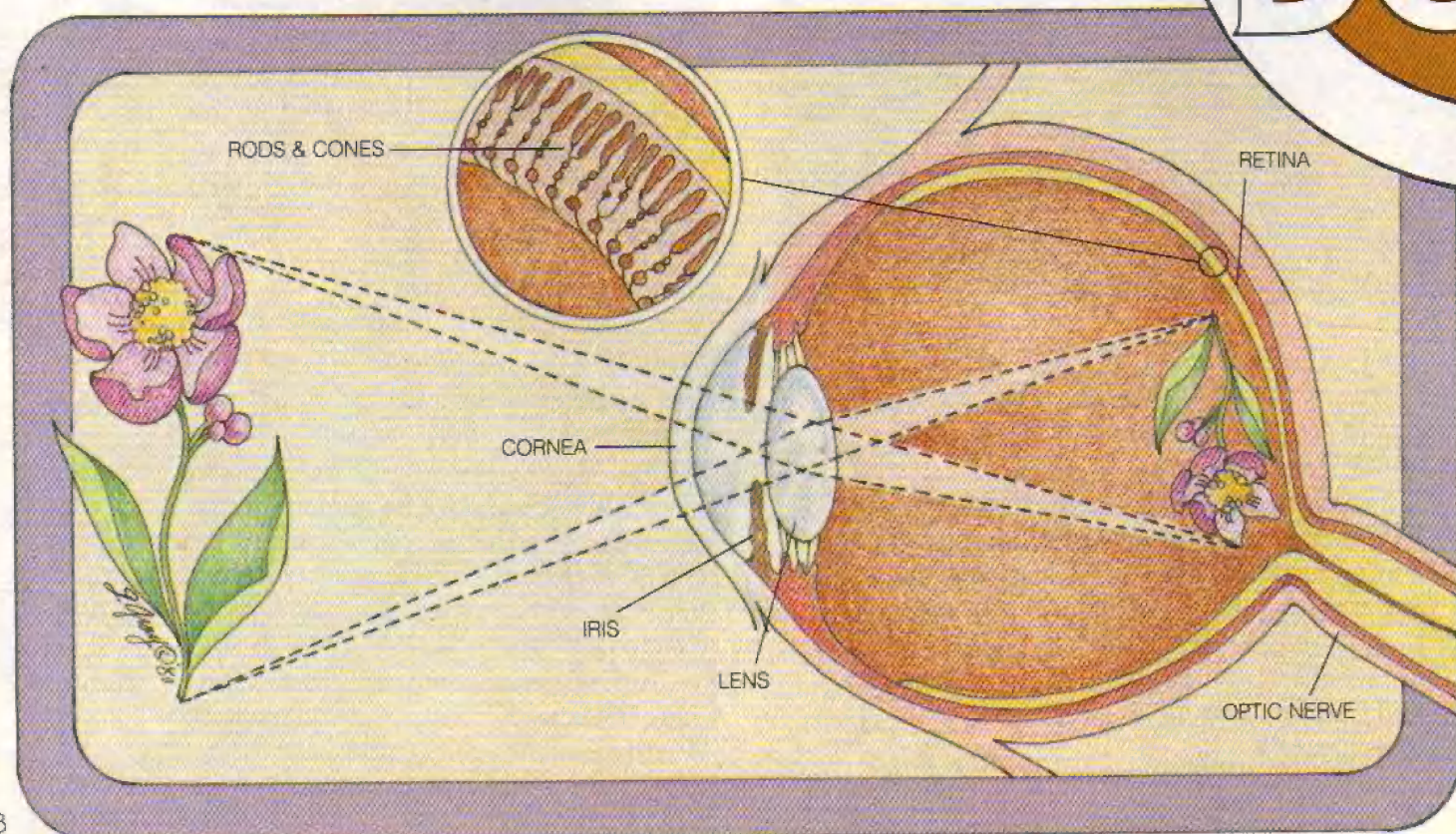
First you need light. During the day, this comes from the sun. At night it might come from the moon or a street light. When the light hits a car (or anything else), some of it bounces off. This light reaches your eye and enters through your pupil.

Now the light reaches the lens in your eye. The lens focuses the light so that you will see clearly. In the same way a camera lens has to be focused just right, so must your lenses. This is done by muscles in the eye. The muscles are constantly focusing and refocusing your eyes—as many as 100,000 times a day!

The light from the car is focused on the back of your eyeball. This part of your eye is called the retina. The retina is covered with cells, called rods and cones. These special cells react to light. When light touches them, they send a message along the optic nerve to your brain.

There's just one little problem. When your lens focuses a picture on the retina, it turns it upside-down! Lucky for you your brain is no dummy. It turns the picture right-side up and you see that car coming down the road.

BUSY BO



Roses are Red, Some Eyes are Blue

All right, why do some people have blue eyes, while others have brown? It all has to do with your parents. They gave you genes. These are tiny chemical messengers that tell your body how to grow. Your parents got their genes from *their* parents. This is called *heredity*.

Though your parents' genes give you eye color, you may still have different eye color than they do. Most people have brown eyes. But many have blue ones. Some even have hazel, green or (would you believe) violet eyes?

dies

The Color You See

If you can see that your eyes are blue or brown, that means your eyes can see different colors. Remember we said you have special cells called rods and cones that help you see? The rods are for brightness. They see how light or dark something is. Your cones are for color. They are what tells your brain that a banana is yellow and that Godzilla is green.

Some people can't see colors well. They are *color blind*. To these people, red and green often look like the same color. Like people's eye color, this is also caused by heredity.

Here's Mud In Your Eye

There's a lot that can go wrong with your eyes. Lucky for you there are plenty of ways to protect them. Your eyebrows and eyelashes keep dust from getting into your eyes. Your eyelids also protect your eyes from bright sun or blowing dust.

If anything does get into your eyes, tears will usually wash it away. Glands near your eyes are producing tears all the time. You need them to keep your eyes from drying out. Every time you blink, your eyelids wipe tears over your eyes. These tears also wash away dirt.

After tears wash your eye, they leave through a tiny hole in the corner of your eye. You can see this in a mirror. The hole carries the tears into your nose. Usually you don't notice this at all. But when you cry, all that extra water makes your nose start to run.

Sight for Sore Eyes

Your eyes are pretty amazing. In an instant they can switch from looking at something a few inches away and read that sign across the street. They do this by changing the shape of the lens. Near or far, the light can then be focused on just the right spot on your retina.

Not everybody's eyes work perfectly. Sometimes lenses don't focus the picture right at the retina. When this happens, what you see is a little blurry. You guessed it. You need glasses.

People who are near-sighted have trouble seeing things far away. The lenses in their eyes focus pictures in front of the retina. People who are far-sighted have the opposite problem. Their lenses focus pictures behind the retina. All a pair of glasses does is change where a picture is being focused by making it land right on the retina where it belongs. Suddenly everything looks crystal clear.



BUSY BO

Eye Tests

1. Your eyes are connected to your brain by the optic nerves. Where the nerve is attached to your brain, there are no rods or cones. These places are called "blind spots." Even though light shines on them, you can't see anything at these spots.

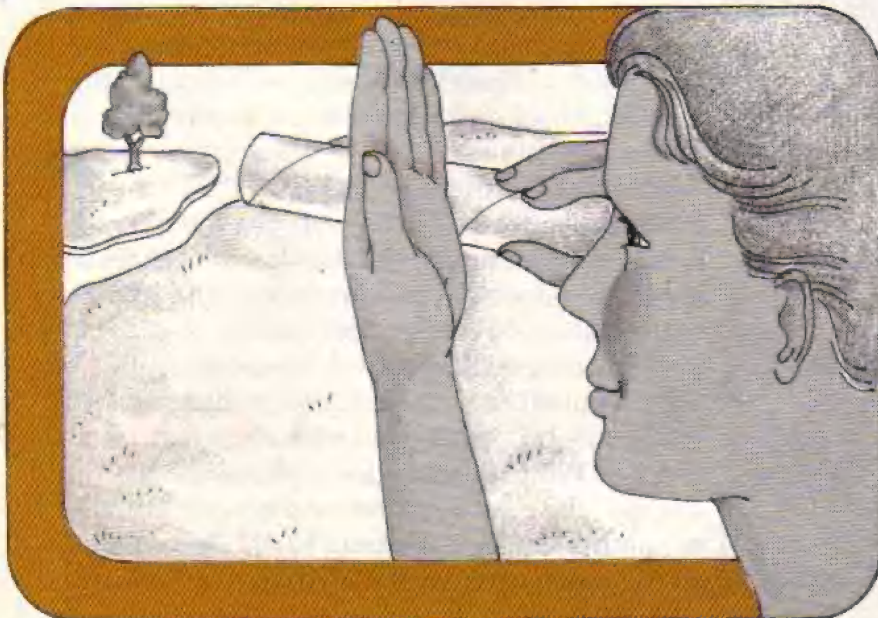
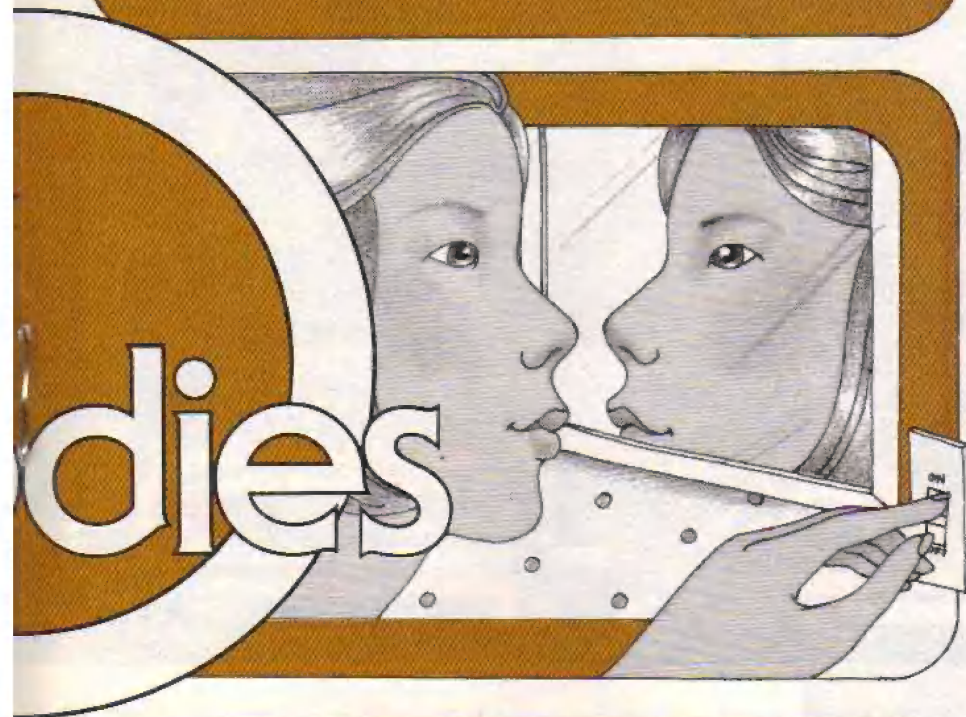
You will understand this better if you find your own blind spot. *Hold this page at arm's length in front of you. Close your left eye. Now stare at the star with your right eye. Move the page towards you very slowly. Keep staring at the star. At one spot, you will notice out of the corner of your eye that the dot has disappeared. You have just found your blind spot! If you don't find your blind spot the first time, keep experimenting.*


2. Can you see your iris at work? Yes, you can! Stand very close to a mirror. Turn off the lights. Now look yourself in the eyes and turn on the lights. Your pupils seem to be getting smaller!

What really happens is that your iris is covering part of the pupil. When that light went on suddenly, it meant too much light was getting in your eye. Your iris made the pupil smaller. If there is not enough light, the opposite thing happens. Your iris makes your pupil larger, to let in as much light as possible.

3. Roll up a piece of paper into a tube. Pick out an object in the room and stare at it. Hold the tube up to one eye. Now, put your other hand next to it as in the picture. Suddenly, your hand has a hole in it. You can see the object right through it!

When you usually look at something, each eye sends a picture to the brain. Each eye was looking at something different. When your brain put the two pictures together, you were left with a hole in your hand.





Sometimes lightning strikes inside a cloud.



Triple ground lightning hits a mountain ridge.

During a thunderstorm last year in Shelby, North Carolina, Jill Skipper was talking on the telephone. "She's a phone nut," her dad said. "If she's not talking on the phone, she's thinking about who she's going to call."

Then lightning struck the power pole outside. The lightning travelled over the phone line, and hit Jill on the ear. The force was so great that it knocked her off the chair. Jill's doing fine now, but she did receive some damage to her ear.

"People don't know how dangerous it is to be on the phone during a storm," Jill's father said.

Striking Beauty

Nothing is as mysterious and brilliant as a flash of lightning in the summer sky. Its power and beauty have amazed people throughout

history. Lightning can be harmful. But if people follow some basic safety rules, there's little to worry about. Then from a safe indoor place, they can stand back and marvel at the beauty and power of lightning.

What is lightning anyway? CONTACT asked Jim Campbell, a man who really knows his weather. He's a meteorologist—a scientist who studies weather—at the Severe Weather Branch of the National Weather Service.

"Lightning is a giant spark of electricity," Mr. Campbell explained. During a thunderstorm the clouds become loaded with electrical charges. When there are too many of these charges, the electricity jumps out—sometimes to another cloud, sometimes to the ground. This sudden release of electrical charges creates a

Lightning is made up of many strokes that happen so quickly, the human eye can't see it.

What to Do in a Storm

Here's a list of Jim Campbell's tips for lightning safety.

When you're outdoors in a thunderstorm:

1. Go indoors. Most people who are killed by lightning are outdoors. If you can't get inside a building, you'll be safe inside a car.
2. If you're in a boat or swimming, get out of the water. Get away from the beach.
3. Remember: Lightning tends to strike the highest point around. Don't stand under a lone tree in an open field.
4. Stay away from metal objects. Don't hang on to metal fences, lawn mowers, bicycles or clotheslines. Metal conducts electricity.
5. Look for a low area, if you can't get indoors.
6. If you're in a group, spread out. Stay several yards away from the next person. A group is more of a target for lightning.
7. If there's no other protection, crouch. Don't lie flat on the ground. The ground is a conductor of electricity.

If you're indoors:

1. Stay away from doors and windows.
2. Don't take a bath or shower. (If lightning hits a house, it could find its way through the metal pipes and into the bath.)
3. Don't talk on the telephone unless it's an emergency.

And remember, whatever you do, never fly a kite in a thunderstorm. Old Ben Franklin was one lucky fellow that he wasn't hit by a bolt of lightning! ➡

PHOTOS © THOMAS IVES

CONTACT LOOKS AT LIGHTNING

by Ellen R. Mednick

flash of lightning.

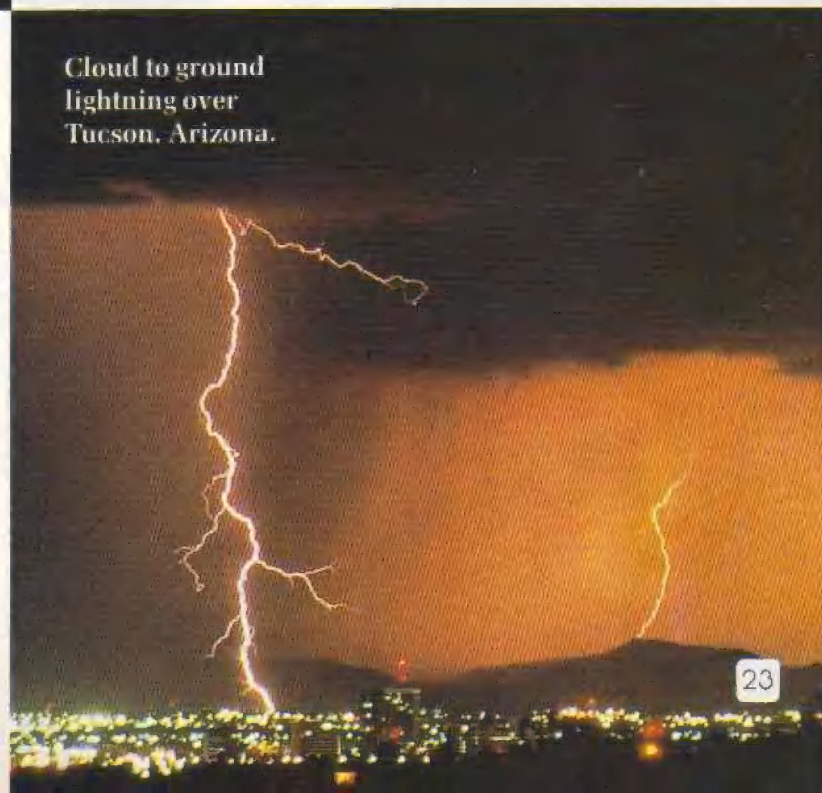
A lightning bolt can reach a temperature of 54,000 degrees Fahrenheit. "It's so hot for that few millionths of a second that the air quickly heats up and expands. This causes a sound wave—like a sonic boom," says Mr. Campbell.

As more and more of these sound waves reach you, you get the rolling sound of thunder. The closer the lightning bolt is to you, the louder the sound. Thunder may be loud and scary, but it can't harm you. But lightning can be dangerous.

In the U.S., lightning kills an average of 100 people each year. It starts 1,000 building fires and 10,000 forest fires. And it causes \$100 million a year in property damage.

But you don't have to be afraid of lightning. You just have to learn how to protect yourself.

Cloud to ground lightning over Tucson, Arizona.



Lightning is beautiful,
but sometimes it
can be dangerous.




PHOTOS © THOMAS JES

Lightning Countdown

Here's a way you can figure out how far you are from a thunderstorm. Since light travels so fast, you see lightning as soon as it flashes. But sound waves travel much slower. The sound of thunder travels one mile in five seconds.

As soon as you spot the lightning, count the seconds until you hear the thunder. (Say "one-one thousand, two-one thousand, three-one thousand..."). Then take the number of seconds and divide by five. That's how far you are from the storm. So, if five seconds go by, the storm is one mile away. If 10 seconds go by, the storm is two miles away. If only a second goes by, the storm is very close.

Lightning Factoids

- An average lightning bolt can supply 250 kilowatts of energy—enough to power your home's electrical needs for up to two weeks.
- At any one time, there are 2,000 thunderstorms going on around the world.
- Lightning occurs more often in Florida and Colorado than anywhere else in the U.S.
- Lightning travels so fast—62,000 miles a second—that it could go to the moon in less than four seconds.
- It's not true that lightning never strikes twice in the same place. It has its favorite spots. 

3·2·1·CONTACT

TV Highlights

September is back-to-school season and a new TV season, too. Not only will "Family Ties" and "The Bill Cosby Show" be back with brand-new episodes, but on September 15 so will our favorite show, "3-2-1 Contact." Join a brand-new cast as they travel across the U.S., to France, and to England in search of science, mystery and adventure.

To know what's in store, use this day-by-day viewing guide. Just check your local newspaper to find out what time "3-2-1 Contact" is on in your area.

SIGNALS WEEK

MON. SEPT. 15 LINGO

"Adam and Eve on a raft. Wreck 'em!" No, it's not a disaster at sea. It's a special language that's only spoken in diners. So who are Adam and Eve, and why are they in a diner? For an explanation of the "yoke", tune in today.

TUES. SEPT. 16 TALKING BIRDS, TALKING ROOMS

Meet a parrot who walks, squawks, and talks his little head off. What he says may knock your feathers off. If he doesn't amaze you, this sure will: a room that obeys your spoken commands.

WED. SEPT. 17 LOOKING FOR CLUES

What can you do with a dog who just won't do tricks? Try getting a killer whale who *does* do tricks. If you can't do that, try this trick: Get a line on some telephone talkers who are not only speaking, but seeing one another over the phone.

THURS. SEPT. 18 GETTING AROUND

Extra! Extra! See all about it! Debra visits a newspaper and finds out how the news gets to you. Then jet to France where you'll uncover some incredible ways the French are getting their news—with computers.

FRI. SEPT. 19 CRACKING CODES

Codes can be a tough nut to crack. But there's one pretty smart person who is using codes at a diner. She can figure out what people are going to order before they open their mouths. For the inside story, tune in today!

OCEANS WEEK

MON. SEPT. 22 ON THE SEA

Take a trip on a boat that doesn't sail on the waves, but *over* them, as we

voyage aboard a hydrofoil and hovercraft. Then go beneath the waves in search of the *Nola*—a ship that sank hundreds of years ago.

TUES. SEPT. 23 IN THE SEA

Good Reef! It's a fish's version of Charlie Brown's favorite saying. This time the "good reef" is actually a ship that is sunk to make a home for fish and other sea life.

WED. SEPT. 24 FROM THE SEA

Help from kelp. Who knows? In the future you may be eating a crunchy kind of seaweed instead of hamburgers and chicken. As a matter of fact, you're probably eating kelp already—it's used in many ice creams.

THURS. SEPT. 25 BY THE SEA

Find out why exploring underwater caves is better in the Bahamas. The woman who takes you on this adventure is Jill Yeager, a deep sea diver.

FRI. SEPT. 26 OF THE SEA

The cutest little critters around are living at the South Pole and in San Diego, California. They're penguins, and you'll get a close-up look at them.

MOTION WEEK

MON. SEPT. 29 WHAT'S UP?

It's not only "Doc." Be amazed as you see a small kid lifting a big animal over her head, and a ship being raised in a canal. It's an incredibly uplifting experience.

TUES. SEPT. 30 BONES

Make no bones about it, you'll love today's show as you witness a skeleton (that's right, a human skeleton) go bike riding.

WED. OCT. 1 SMASHING

You know all those fights you see on TV and in the movies? They look like they probably hurt, but surprise, surprise: Fights on TV shows are fakes. Paco, Robin and Mary let you in on

fake fighting—and get in some phony punches of their own.

THURS. OCT. 2 GETTING A GRIP

Simply super slithery snakes are in the picture today as Debra and David handle a boa and a milk snake.

FRI. OCT. 3 HEAVE HO!

Take a trip on a tugboat as it helps dock one of the world's biggest ships. Visit "Maggie's Machine Shop" and find out if one kid can lift two bigger kids—at the same time.

EATING WEEK

MON. OCT. 6 TOOTH DETECTIVES

Sink your teeth into this episode that deals with something everyone has—teeth. The kids help a tooth detective solve a tooth mystery as they trace a million-year-old tooth to its owner.

TUES. OCT. 7 PICKY EATERS

If you think your little brother or sister is a fussy eater, check out the animals in today's episode. Koalas, pandas and baby hippos won't eat just anything. Find out what they do munch on—and why.

WED. OCT. 8 ZOO FOOD

What's a herbivore, a carnivore, an omnivore? Outer space creatures from a sci-fi movie? The latest brand of toy robots? Uh-uh. Tune in today to find out what—and who—are behind these weird names.

THURS. OCT. 9 DOWN THE HATCH

What do you do if you can't drink milk? Some people have that problem. Find out why, then get set for a gutsy scene as you get an inside look at the inside of a pig.

FRI. OCT. 10 LEFTOVERS

Mary and Todd discover that leftovers may not be yesterday's meat loaf. These leftovers were left by people who lived 6,000 years ago. For the age old story, tune in today!



Photo © Eric Lefkowitz/CLW

THE BLOODHOUND GANG

The Case of the Missing Message

by Decky Cheston

"Can you believe it?" Ricardo opened the office door and dropped a stack of school books on the desk.

"Two history quizzes in one week!"

"Tell me about it," Vikki said from behind a notebook. "Boy, the summer sure went fast!"

"I'd rather be cracking cases than cracking books," Skip added.

Just then there was a knock at the office door.

"Come in!" Vikki called out.

The door opened and a tall young woman appeared in the doorway. She was wearing a silk dress and a beautiful pearl necklace.

"You've got to help me," she said.

Ricardo shoved aside his history book and offered their new client a chair.

"I'm Heather Ryan," she began.

"The Heather Ryan?" Skip exclaimed.

"Somebody want to fill me in?" asked Vikki.

"Her father was Roger Rupert Ryan III," explained Skip. "The recording industry tycoon. His companies made records, tapes, videos..."

"My father died recently," Heather interrupted.

"I'm sorry to hear that," replied Ricardo.

"Yes," added Vikki. "But why are you here?"

Heather's voice dropped. "I've lost my father's fortune."

"But that's impossible!" cried Skip.

"The reading of the will was this afternoon,"

Heather continued. "Most of my father's fortune is going to my cousin, Elliot."

"The Elliot Ryan?" exclaimed Skip. "The one who threw wild parties at your mansion when your father was away on business?"

"That's my cousin, all right."

"I don't see how we can help," said Vikki.

"Oh, you can," said Heather. "You see, I know the will is a phony, and you can help me prove it!"

Some Sound Advice

While the Bloodhound Gang rode to the Ryan mansion in Heather's limousine, she explained what happened.

"After Daddy died," Heather told them, "I found this at his bedside."

Heather took a tape cassette out of her purse and popped it into the limo's state-of-the-art tape deck. She fast-forwarded it to the end.

The Gang listened to Mr. Ryan's voice. "And don't worry about Elliot, because I've made a very permanent record of my will. It will be a moving experience. That nephew of mine is finally going to have to look me in the eye and see the light. And he won't be able to needle me, either. You'll find the will in the..."

"That's all there is," Heather said sadly.

Just then the limo pulled up to the Ryan home.

"Wow!" exclaimed Ricardo.

The driver opened the limo door and a butler opened the door to the mansion. Heather and the Bloodhound Gang walked into the huge house. They were amazed. The place was an electronic playground. Every room was filled with just about any gadget you could imagine: large screen TV's, stereo systems, computers and video games.

In the living room, a tall, curly-haired man was watching a movie on a 35-inch stereo TV. He was wearing a satin robe and velvet slippers and sipping a cool drink.

"Hello, Heather," he said without getting up. "Come to fetch your things? I'd like you out of my house by tomorrow."

"Your house?" yelled Heather. "That will's a fake, and I'm going to prove it!"

"Really, darling?" Elliot said with a sneer. "And who are these shrimps?" he added, waving a hand at Vikki, Ricardo and Skip. "Don't tell me they're detectives."

"As a matter of fact, we are!" said Ricardo.

Vikki turned to Heather. "You keep Elliot busy while we look around," she whispered. "Where did your father keep his papers?"

"Papers? Well, there are some old filing cabinets in the attic."

"Okay, we'll start there," Vikki whispered. She motioned the two boys into the hallway.

"And just where do you think you're going?" asked Elliot as the trio headed out the door.

"Never mind us shrimps," Vikki said. "We're just fishing around for clues."

ILLUSTRATIONS BY BOB PEPPER



Getting the Picture

"What was that rumbling noise?" asked Ricardo.

"I think it was my stomach," answered Skip.

The three detectives had been in the mansion's attic for over an hour.

"I'm as hungry as a Saint Bernard," Skip groaned.

"And I think we're barking up the wrong tree!" said Ricardo.

"What do you mean?" Vikki asked.

"Haven't you noticed?" Ricardo answered her. "All these papers are from before 1960!"

"You're right!" Vikki exclaimed.

"Look at all the high-tech recording equipment Heather's father owned. After 1960, I bet he never put anything on paper."

"That's true," said Skip. "Like that last message—it was on tape."

"You know, I bet the will is on tape also!" said Vikki.

"Yes," Ricardo interrupted, "videotape!"

"What?" asked Skip.

"Remember Mr. Ryan's last message? He said the will would be a moving experience and that Elliot would have to look him in the eye. I bet Mr. Ryan made his will into a video!"

The three of them rushed down to the large library on the second floor. The shelves were filled with video cassettes.

"Wouldn't you know it?" moaned Skip. "Of course a guy like Roger Rupert Ryan would have thousands of these."

"And the will could be any one of them," Vikki said.

"No it couldn't," said a voice behind them. They turned, and standing in the doorway were Heather, Elliot and an older man in a three-piece business suit. He held a briefcase in one hand.

"I am Robert Caswell, Mr. Ryan's attorney," said the stranger. "I will have to ask you to leave this house immediately."

"Yeah, get lost," Elliot sneered at them.

"Sorry, guys, I tried to stall as long as I could," Heather explained.

"Mr. Caswell," Vikki began, "Don't you want us to find Mr. Ryan's real will?"

"I already have his will, right here," Caswell said, holding up the briefcase. "I helped him make it." ➡

"Oh, are you a cameraman?" asked Ricardo.
"A cameraman?" Mr. Caswell looked shocked. "Young man, what are you talking about?"

"We've already figured out that Roger Rupert Ryan's will wouldn't be on paper," Ricardo explained. "He must have made a video."

"If that is so," Mr. Caswell said, "then perhaps you can produce the tape."

"Wait a minute!" shouted Skip. "What if it's not on a tape?"

"Oh yeah?" said Elliot. "How could it be on video and not on tape?"



ILLUSTRATION BY BOB PEPPER

"Follow me, and you might find out," said Skip, and left the room.

They all followed him down the hall and into the music room. Here the walls were covered with row after row of phonograph records.

"Records?" Vikki asked. "I thought you said the will was on video."

"It is," said Skip. "But it's on a video disk, not a videotape."

"It could be," said Heather. "A video disk looks like a record album, but it stores video pictures. My father's company makes them."

"That's right," said Skip. "Remember Mr. Ryan's message? He said he made a *permanent* record. Well, a videotape can be erased. But you can't erase a video disk!"

Vikki chimed in. "That's right. He also said that Elliot would have to see the *light*. That's how video disks work. There are tiny pits cut into the surface of the disk. They form a code. A laser beam is aimed at the disk and it reads the code. Then the code is translated into pictures

and sound."

"The message said Elliot wouldn't be able to *needle* Mr. Ryan," Skip added. "Well, you don't use a needle to play a video disk, you use light—a laser."

"You still haven't shown me a will," said Mr. Caswell with a grin.

Some Will Power

"These records are in alphabetical order so I bet a will is right here—under W!"

Ricardo pulled a shiny plastic disk from a row of records.

"I'll take that, thank you!" Suddenly Mr. Caswell snatched the disk from Ricardo's hand. He tossed it to Elliot, who ran his fingernails across the disk's surface.

"There," he said, throwing the disk to the floor. "You can't prove anything now."

"Sorry, Elliot," Skip said, picking the disk up from the floor. "Scratching won't hurt it. The laser shines through the plastic and reads the code underneath."


"So that's what Daddy meant about a permanent record," said Heather.

"Yes, and you two," said Vikki to Elliot and Mr. Caswell, "just lost the Ryan fortune."

A little while later, the police led Elliot and Mr. Caswell away. Heather had her fortune back.

"Thank you," Heather said to the Gang.

"Oh it was nothing," said Ricardo.

"Yeah," added Skip. "Remember, where there's a will, there's a way." 

**Watch for next month's
Bloodhound Gang
mystery!**



ILLUSTRATION BY DAVE FLE BLAND



ILLUSTRATION BY BRAD HAMANN

Future Perfect

A 3-2-1 CONTACT Poll

Imagine yourself in the year 2006—20 years from now. What do you think your life will be like? What do you think the world will be like? Nobody knows for sure. But we'd like to hear your ideas. There are no right or wrong answers. We'd like to know what you really think. We'll print what you say in a future issue.

First, tell us about yourself.

Name _____ Age _____ Boy or Girl _____ Grade _____

Address _____

City _____ State _____ Zip Code _____

Space Travel

- 1) Do you think there is life on other planets? Yes _____ No _____
- 2) If you think there is, what kind of life would it be? Check all that apply.
Human-like _____ Plant _____ Animal _____ Other _____ (If other, please describe.) _____
- 3) Do you think people from Earth will live on other planets in 2006?
Yes _____ No _____
- 4) Do you think there will be regular flights between Earth and other planets in 2006? Yes _____ No _____
- 5) Would *you* like to travel to another planet? Yes _____ No _____
- 6) Would *you* like to live on another planet? Yes _____ No _____
- 7) Will aliens from another planet visit Earth by 2006? Yes _____ No _____

Life on Earth

The Family

- 1) In 2006, do you think men and women will equally share the work of raising children?
Yes _____ No _____
- 2) Do you think men and women will be doing the same jobs as each other *outside* the home in 2006?
Yes _____ No _____
- 3) Will men and women earn the same salary for the same job? Yes _____ No _____
- 4) Do you expect to get married when you're _____ under 20 years old _____ 20-25 years old _____
26-30 _____ 31-35 _____ 36-40 _____ over 40 _____ not at all _____
- 5) How many children do you think you'll have when you are an adult? 1 child _____
2 children _____ 3 _____ 4 _____ 5 or more children _____ none _____
- 6) What kind of job do you think you will have? _____

(Poll continued on next page.)

Home and School Life

1) Do you think robots will be doing many of the chores around the house in the year 2006?

Yes _____ No ☒

2) What jobs will robots be doing? _____

3) Do you think some people will be living in any of the following places in the year 2006? (*Check all that apply.*) Underground Communities _____ Underwater Communities _____

Space Colonies _____ Orbiting Spacecraft _____ None of these _____

4) In 2006, do you think school will be much the same as it is today? Yes _____ No _____

5) Which do you think children will be learning most of their school lessons from? (*Check one.*)

Teachers _____ Computers _____ Books _____ Television _____

Health

1) Do you think doctors will find cures for any of these illnesses by 2006? (*Check all that apply.*)

Cancer _____ AIDS _____ Common Cold _____ Chicken Pox _____ Heart Disease _____

2) How old will most people live to be in 2006?

60 _____ 70 _____ 80 _____ 90 ☒ 100 _____ 110 _____

The World

1) In 2006, do you think the U.S. and the Soviet Union will be better friends than they are now?

Yes _____ No _____

2) Do you think there will be a nuclear war between now and the year 2006? Yes _____ No ☒

3) Will the environment be safer and cleaner than it is today? Yes _____ No ☒

4) What will be the most common energy source in 2006? (*Check one.*) Oil _____ Coal _____

Nuclear ☒ Steam from underground _____ Tides _____ Wind _____ Solar _____

5) Which of these animals will be extinct by the year 2006? (*Check all that apply.*)

Grizzly Bear _____ Panda ☒ Whale ☒ Tiger _____ Gorilla _____ None of these _____

6) Will a woman be elected President of the U.S. by 2006? Yes _____ No ☒

7) What is your major hope for the future? more

8) What worries you most about the future? _____

9) Let's say you want to let people in the future know what life was like in 1986. Name three items you would put in a time capsule that show what life is like now.

Thanks very much for filling out this poll! Please send this poll to:

Future Poll
3-2-1 Contact Magazine
1 Lincoln Plaza
New York, NY 10023

ENTER

THE
HIGH-TECH
WORLD OF
COMPUTERS

Word Jumble

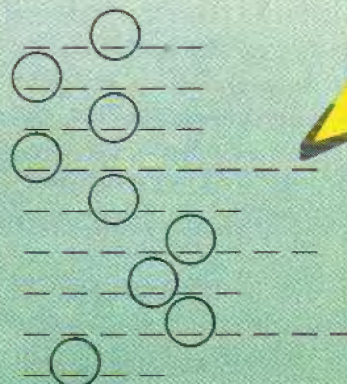
Here's a twist on an old puzzle. You can find the answer to this riddle by unscrambling the com-

puter words below. They are terms known to hackers from Los Angeles to Charleston. Once you have unscrambled each word, the circled letters will spell out the

answer. You should waltz right through it. In fact, it shouldn't take you more than a few minuets, uh, minutes, that is. **Answer on the Did It! page.**

Where do computers go to dance?

DOMEM
TINUP
SABIC
KEYBORAD
POLFYP
TIJSYCOK
NESCRE
FOWLHCRTA
PHIC



newsbeat

The French Log-on With Minitel

by Richard Chevat

Imagine a country where everyone has their own video terminal. The people in this country can use their terminals to shop, do their banking, or play computer games. Without leaving home, they can get the news, find out what's playing at the local movie, or "talk" to lots of other people at the same time.

Sound like the distant future? Well, it's closer than you think. In France there's a computer network which has 1.4 million people online. And more are joining every day.

The network is called "Minitel." That's also the name of the video terminal customers are given. The Minitel terminal has a screen and a keyboard, but it's not a computer. It won't run programs or do word



PHOTOS © MINISTÈRE DES PTT-SIC

Minitel terminals like this are free for home users.

processing. People can only use it to log-on to the Minitel system.

Minitel is run by the government-owned phone company. It started as just a computerized phone book. Now subscribers can use it to find out about everything from the weather to what's on sale at the local department store.

Le Kiosque

The most popular part of Minitel is the service called *Le Kiosque* (luh KEY-osc). *Kiosque* is the French word for a small newsstand, and the Minitel service is like having an electronic newsstand in your home. By typing a few keys on the terminal, users can get the latest news or look through ads. Many of *Le Kiosque's* services are run by French newspapers and magazines.

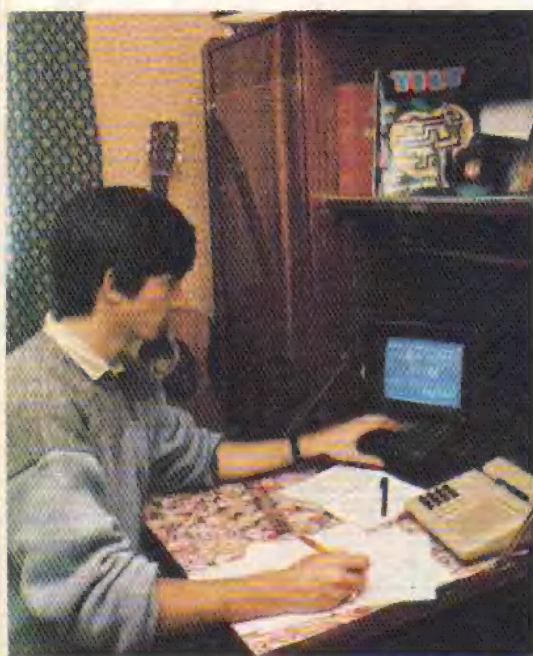
People can also use *Le Kiosque* to talk to other Minitel users. There are "channels" in the system where users can "chat" with each other, using code names. Minitels are free for private

homes, but it costs about 12 cents a minute to use *Le Kiosque*.

The closest thing to Minitel in the U.S. are private computer systems like The Source and CompuServe. They also offer news, shopping, games and "chat" services. But even CompuServe, the biggest U.S. network, has only 270,000 subscribers. And people have to own a personal computer and a modem to be able to use one.

But thanks in part to the success of Minitel, U.S. companies are looking into ways to build bigger computer networks here. Someday, having a computer terminal will be as common as having a telephone. What will the next step be? Maybe an international computer network. Then we'll all be able to turn on our video screens and type "Bonjour, Minitel!"

To learn more about Minitel, tune in to 3-2-1 Contact on television, September 18 on your local PBS station.



The Slipped Disk Show



ILLUSTRATION BY CAMERON EAGLE

Hello, all you kilobyte kiddies! This is Slipped Disk, the floppy disk jockey, ready to answer your questions about computer screens, video machines and salad greens.

Speaking of salad greens, the summer's over and it's time for everyone to go back to school, even me! That's right, you're never too old to learn. That's why I attend the Slipped Disk Institute For Famous Floppy Disk Jockeying. But I'll tell you more about that later. First, let's answer this question from **Jenny Lamkin**, 12, of Houston, Texas. Jenny asks:

"Can two different types of computers 'talk' to each other if they both have modems?"

Jenny, you wouldn't have to ask that question if you attended the Slipped Disk Institute For Famous Floppy Disk Jockeying. But since you don't, here's the answer:

Yes, two different types of computers can communicate with each other if they are both hooked up to modems and a phone line. But two things have to happen first.

Number one, the modems on both computers have to be set to the same *protocols*. That means they have to be set to send and receive data (information) in the same way. For example, they have

to be sending and receiving at the same speed.

Secondly, both computers have to be sending data in the same code. Almost all computers use a code called *ASCII*.

For more on talking computers, let's listen to our next questioning computer kid. He's **John Klein**, 9, from New Berlin, Wisconsin. John wants to know:

"Will computers ever talk?"

John, at the Slipped Disk Institute For Famous Floppy Disk Jockeying, our highly-trained staff (namely me) has a lot of experience with talking computers. Last month we had one that spoke with a French accent, but all it said was, "Bonjour, I am ze personelle comptaire."

Seriously, there are now many "talking" computers. In fact, several home computers such as the Macintosh or the Commodore 64 can be programmed to "speak." You can buy software for these computers that will translate text (typed words) into sounds. In some cases you must also buy add-on hardware to help the computer make the right sounds.

Right now, the speech produced by home computers is not very realistic. But more advanced

machines almost sound like real people. Some can even sing!

So, John, computers can talk, but that doesn't mean they have anything interesting to say. Our next question, however, is very interesting. It's from **Lori LaFrankie**, of Plantation, Florida, and Lori asks:

"What is a CPU?"

Lori, at the good old Slipped Disk Institute For Famous Floppy Disk Jockeying, we have lots of CPUs. We also have RAMs, RPMs, ABCs, NFLs, and a whole lot of other letters. But luckily for you, I happen to know about CPUs.

CPU stands for Central Processing Unit. This is the chip inside every computer that makes your programs "run." This chip is also called a *microprocessor*.

And that about wraps it up for this show. Time for me to get back to the S.D.I.F.F.D.J. I don't want to miss lunch. The cafeteria is serving flopjacks. Remember, send your computer questions to:

The Slipped Disk Show
3-2-1 CONTACT
1 Lincoln Plaza
New York, N.Y. 10023
 See ya next month!

The Slipped Disk Institute does not give athletic scholarships.

REVIEWS

by Phil Wiswell and Bill Gillette



Arctic Fox

(Electronic Arts, Amiga, \$39.95)

Arctic Fox is a futuristic tank battle. We don't usually like battle games, but this one has an appeal we can't resist, probably because the graphics on the Amiga are so good. In fact, *Arctic Fox* really shows how far computer technology has advanced since the days of Pong, the first video game.

This game is an excellent test of your ability to plan strategy and then follow through in an action situation. The tank you control is out of this world and the view of the landscape and your controls is very detailed. Meanwhile, the Antarctic battlefield swarms with enemy jet fighters and tanks. Even though you have the most powerful vehicle on the field you are outnumbered by a hundred to one. If you need a challenging, fast-paced, loud, exciting computer game, *Arctic Fox* is it.

Wrap-Up

Phil: I think I could take or leave this game on any other computer except the Amiga.

Bill: *Arctic Fox* is an excellent game of arcade strategy. I recommend it highly to all Amiga owners.

Mean 18

(Accolade, IBM PC, \$49.95 also for the Atari ST and Amiga, \$39.95)

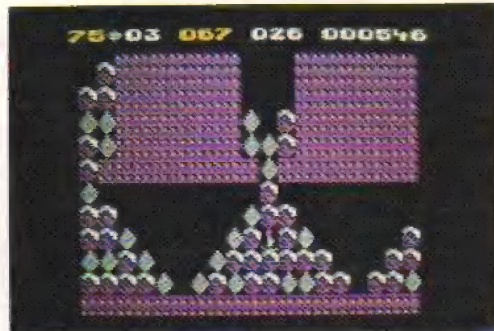
Mean 18 is video golfing at its best. It offers a choice of faithfully recreated famous 18-hole courses such as Pebble Beach or Augusta National. And it is also a construction set that makes it easy to design your own course. It is for one to four players.

The disk has almost as many options as real golf. You may use the different tees, ask your "caddy" to suggest the proper club for each shot, and even hit a bucket of balls on a driving range before starting. You have a full set of clubs, each with a maximum distance range, and you must learn to adjust your swing. This is where the driving range comes in very handy.

Wrap-Up

Bill: A very realistic golf game. Unfortunately, the graphics are not that good on the IBM. The Atari or the Amiga may do a better job.

Phil: I think real golf is boring, but I'm not bored by the strategy required for *Mean 18*. Serious golfers and serious computer gamers will both love it.



Super Boulderdash

(Electronic Arts, Apple II, \$29.95; also for IBM PC, Atari 400/800 and Commodore 64/128)

Super Boulderdash is actually two games on one disk: the original *Boulderdash* and its sequel, *Boulderdash II*. Together they are a fantastic set of arcade challenges. Each game consists of 16 different caves or mazes to explore and solve on five different skill levels.

Wonderful color graphics, sound effects, and animation contribute to the excitement of working through these mazes. You create your own path as you tunnel through the dirt of the caves. Unfortunately, this also creates a path for boulders resting in the dirt. Getting hit by a falling boulder costs a life. It's also quite embarrassing since you are the one that made the boulder fall.

In each cave you will find plenty of boulders. You'll also find a few diamonds, which have a point value. You have a limited time in which to gather enough diamonds. This will open an escape tunnel to the next maze.

Wrap-Up

Phil: This is one of the very few home video games with such great appeal that it was turned into a

coin-op arcade game. I like this maze game better than I ever liked Pac-Man.

Bill: If you liked *Boulderdash*, you'll love *Super Boulderdash*. It's not often that the original and the sequel come in the same box.

Star Trek: The Kobayashi Alternative

(Simon & Schuster, Apple II, \$40; also for the IBM PC)

For fans of the TV show *Star Trek* or fans of interstellar travel and exploration, this text adventure is indeed the "final frontier." You play the part of Captain Kirk as you move through the hundreds of locations within the *Enterprise* spaceship. You also command your crew to maneuver the ship to many different planets. There are also hundreds of locations on the planets that you can visit.

Familiar members of your crew include Spock, Dr. McCoy, Scotty and Chekov, all of whom you may talk to directly or through the ship's intercom. Each member of the crew "appears" in a text window on the screen and each performs special duties. As you might imagine, there are thousands of decisions to be made on a starship this large. As captain, you are responsible.

The central task of this new five year mission is to locate and rescue Mr. Sulu. He is on another starship that is lost. It may have been vaporized or perhaps it is disabled and stranded in space. You are Mr. Sulu's only hope.

Wrap-Up

Bill: Warning: This game is H-A-R-D!! But it's fun.

Phil: I like the way you can talk to all the characters. They all have their own personalities, just like on TV!

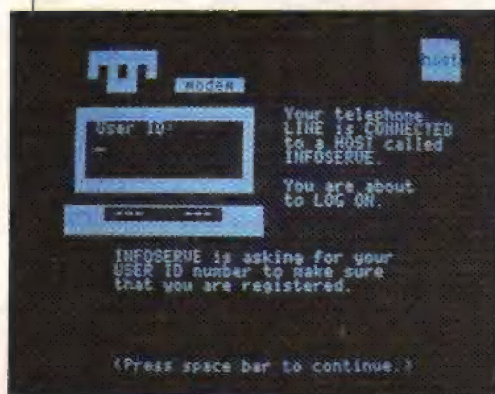
The Information Connection

(Grolier, IBM PC, \$60; also for Apple II and C-64)

This disk is the easiest way we know of learning how to use a modem to link your computer to another. Even better, once you're done learning, you can use *The Information Connection* as real communications software.

But you don't need a modem or even a phone to use the learning part of the disk. The program simulates an on-line session. In other words, it trains you in dialing and "talking" to a make-believe computer at the other end of a make-believe phone line. So for a small price, you can learn how to use a modem without having to go out and buy one.

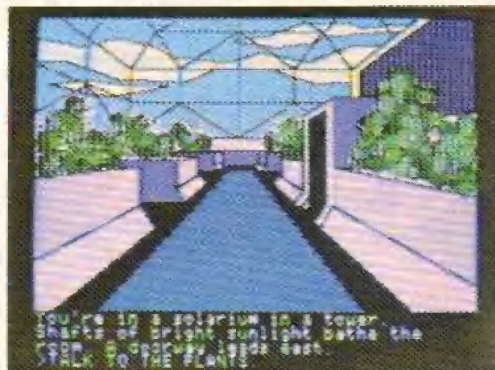
There are different options to choose from. One mode lets you learn about telecommunications through questions and answers. Another lets you practice what you've learned in simulated sessions. And when you're ready, you can actually go on-line.



Wrap-Up

Phil: This combination of a teaching disk with real communications software is very good.

Bill: Yes, it's an excellent introduction, but it only covers the basics.



Oo-Topos

(Polarware/Penguin, Apple II, \$34.95; also for the IBM PC, Commodore 64/128, Atari ST, Macintosh and Amiga)

This is a science-fiction adventure that features more than 100 great-looking graphic screens. Here's what you know at the beginning of the game: It is 1995. You are in a prison cell on the alien planet of Oo-Topos, far from Earth. A transporter of hazardous waste has mistakenly dumped its cargo near the sun. Your task is to break out of prison, locate your spaceship, learn to fly it, reach the area of the spill, and stop it from spreading before all life on Earth dies.

This is a noble mission. It also is a long one. You can expect to spend quite a bit of time trying to solve the many puzzles in this game. You have to map out your progress and search each room very carefully to locate all the items you'll need.

Wrap-Up

Bill: The plot of *Oo-Topos* is as interesting as any text-only adventure, but it has excellent graphics, too. Highly recommended for adventurers.

Phil: I agree completely. All I want to do lately is play *Oo-Topos*. The programmers did a great job on this one. It is a fun adventure, very absorbing, well written and at times humorous. Enjoy!

basic TRAINING

PROGRAMS FOR YOUR COMPUTER

Hocus Pocus!

Apple, Atari, Commodore, IBM,
TI 99/4A

Here's a program that's bound to amaze, astonish and astound you. Would you believe, surprise and shock you? Would you believe, make you laugh a little?

This is a computerized magic show complete with animal tricks and amazing acts of wizardry. All you need is a little imagination and a sense of humor.

"Hocus Pocus!" was pulled out of a hat by **Sean George**, 11, of Allentown, Pennsylvania.

Below is the program for Apple II computers. Following that are instructions for adapting it to other machines.

```

10 HOME
20 PRINT "I AM A COMPUTER
  MAGICIAN"
30 PRINT "WHAT WOULD YOU
  LIKE ME TO DO?"
40 PRINT "SELECT NUMBER"
50 PRINT "1. CUT A WOMAN
  IN HALF"
60 PRINT "2. MAKE AN
  ELEPHANT APPEAR"
70 PRINT "3. TURN DIRT INTO
  GOLD"
80 PRINT "4. TIUQ"
90 INPUT C
100 ON C GOTO 120,190,280,430
110 GOTO 10
120 HOME
130 PRINT "I AM NOW GOING TO
  CUT A WOMAN IN HALF"
140 FOR D = 1 TO 2000: NEXT D
150 PRINT : PRINT
160 PRINT "A WO MAN"
170 FOR D = 1 TO 2000: NEXT D
180 GOTO 10
  
```



ILLUSTRATIONS BY MARTIN LEMELMAN

```

190 HOME
200 PRINT "I WILL NOW MAKE AN
  ELEPHANT APPEAR."
210 FOR D = 1 TO 2000: NEXT D
220 HOME
230 FOR D = 1 TO 2000: NEXT D
240 VTAB 10: HTAB 6
250 PRINT "AN ELEPHANT"
260 FOR D = 1 TO 2000: NEXT D
270 GOTO 10
280 HOME
290 PRINT "I WILL NOW TURN
  DIRT INTO GOLD."
300 FOR D = 1 TO 2000: NEXT D
310 HOME
  
```

```

320 PRINT "DIRT"
330 FOR D = 1 TO 300: NEXT D
340 PRINT "GIRT"
350 FOR D = 1 TO 300: NEXT D
360 PRINT "GORT"
370 FOR D = 1 TO 300: NEXT D
380 PRINT "GOLT"
390 FOR D = 1 TO 300: NEXT D
400 PRINT "GOLD"
410 FOR D = 1 TO 2000: NEXT D
420 GOTO 10
430 HOME
440 PRINT "TIUQ SPELLED
  BACKWARDS IS QUIT"
450 PRINT "BYE"
  
```

Atari

Change all HOME statements
to PRINT CHR\$(125)

Change line 240 to:
240 POSITION 8,12

Commodore 64/128

Change all HOME statements
to PRINT CHR\$(147)

Change line 240 to:
240 PRINT:PRINT:PRINT

IBM

Change all HOME statements
to CLS.

Change line 240 to:
240 PRINT:PRINT:PRINT

TI 99/4A

Change all HOME statements
to CALL CLEAR.

Change line 240 to: 240 PRINT

If you don't have extended
BASIC, then break up all multiple
statement lines. For example,
replace line 140 with these two
lines:

```

140 FOR D = 1 TO 1000
145 NEXT D
  
```


String Spirals

IBM PCjr and PC with
color graphics card

This is knot a hard program to use. Just run it and watch the colorful strings twist across your screen. We'd like to say it was written by Mark Twine, but it wasn't. Instead, we roped it in from **Chris Pauli**, 16, of Tulsa, Oklahoma.

```

10 KEY OFF:CLS
20 SCREEN 1:RANDOMIZE TIMER
30 COLOR 0,0
40 X=INT(RND*200)+100
50 Y=INT(RND*100)+50
60 X1=INT(RND*200)+100
70 Y1=INT(RND*100)+50
80 C=INT(RND*3)+1
90 XD=INT(RND*3)+2
100 YD=INT(RND*3)+2
110 X1D=INT(RND*3)+2
120 Y1D=INT(RND*3)+2
130 IF RND>.5 THEN
    XD=-XD:YD=-YD:X1D=-
    -X1D:Y1D=-Y1D
140 LINE (X,Y)-(X1,Y1),C
150 C=INT(RND*3)+1
160 X=X+XD:Y=Y+YD
170 X1=X1+X1D:Y1=Y1+Y1D
180 IF X<5 THEN XD=4 ELSE
    IF X>314 THEN XD=-XD
190 IF X1<5 THEN X1D=4 ELSE
    IF X1>314 THEN X1D=-X1D
200 IF Y<5 THEN YD=4 ELSE
    IF Y>194 THEN YD=-YD
210 IF Y1<5 THEN Y1D=4 ELSE
    IF Y1>190 THEN Y1D=-Y1D
220 IF INKEY$="" THEN 140 ELSE
    CLS:RUN

```



UFO Launch

Commodore 64/128

You can really take off with this far out program. It sounds like a flying saucer taking off. "UFO Launch" came to us out of the blue from **Louis Serico**, 10, of Eastchester, New York.

```

10 A=0:PRINT CHR$(147)
20 FOR L=54272 TO 54296
30 POKE L,0:NEXT L
40 POKE 54296,15
50 POKE 54277,8:POKE 54278,255
60 POKE 54276,17
70 FOR F=15 TO 95
80 POKE 54287,F
90 A=A+1
100 FOR FO=1 TO 255 STEP A
110 POKE 54273,FO
120 NEXT FO:NEXT F
130 POKE 54278,15

```

Screen Weaver

Apple

This program won't spin you a yarn but it will darn well weave some bright colors on your screen. It was fabricated by **Man Nguyen**, 13, of Minneapolis, Minnesota.

```

10 GR:HOME
20 VTAB 21:PRINT "ENTER
    NUMBER (1-10)"
30 INPUT TS:T=VAL(T$)
40 IF T<1 OR T>10 THEN
    GOTO 10
50 FOR X=0 TO 39
60 FOR Y=0 TO 39
70 COLOR=(X+Y)/T
80 PLOT X,Y:PLOT X,39-Y
90 PLOT 39-X,39-Y
100 PLOT 39-X,Y
110 NEXT Y:NEXT X

```

Send Us Your Programs

If you've written a program you'd like us to print, send it in. Include a note telling us your name, address, age, T-shirt size and type of computer. If we like it, we'll print it and send you \$25.

All programs must be your own original work. We cannot return programs. Please do not send disks.

Send your program to:

Basic Training
3-2-1 CONTACT Magazine
 1 Lincoln Plaza
 New York, N.Y. 10023



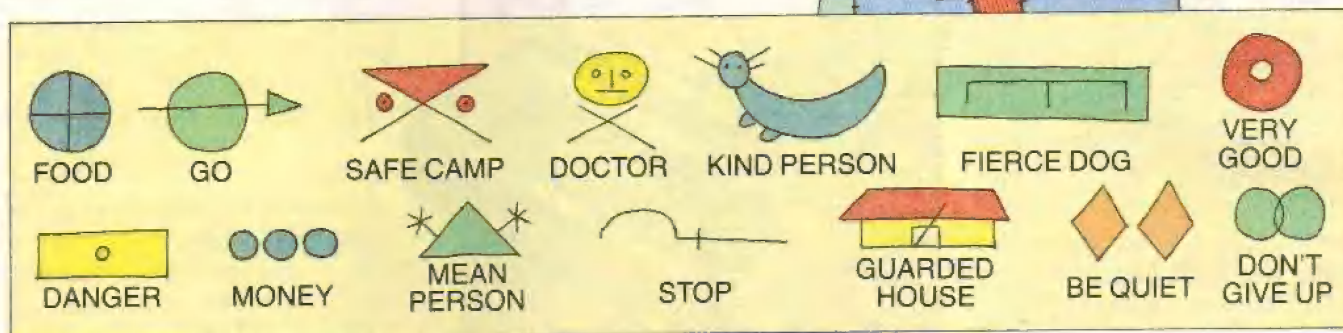
Extra!

by Ellen R. Mednick

Here's a back to school EXTRA! just made for September days!

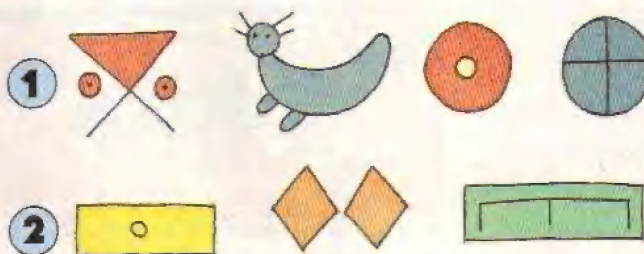
Simply Symbols

Kanzi the chimp uses symbols called lexigrams to communicate with humans. Sometimes people use lexigrams too. Homeless travelers across the U.S., called hoboes, made up their own symbols to let each other know what was happening at stops along the way. Here are some of the signs they used:



ILLUSTRATIONS BY MICHAEL DONATO

Now try to solve this puzzle. Decode the two messages and decide which would be a safer stop for a friendly traveler. Check out the Did It! page to see which is the best choice.



Electric Excitement

You read that lightning is a sudden release of electrical charges. Here is a fun experiment you can do with static electricity.

Slowly turn on the tap water until it barely flows in a steady stream. Rub a comb through your hair several times or along a piece of wool. Then place the comb near the water. The water will be attracted to the comb.

Weather Wit

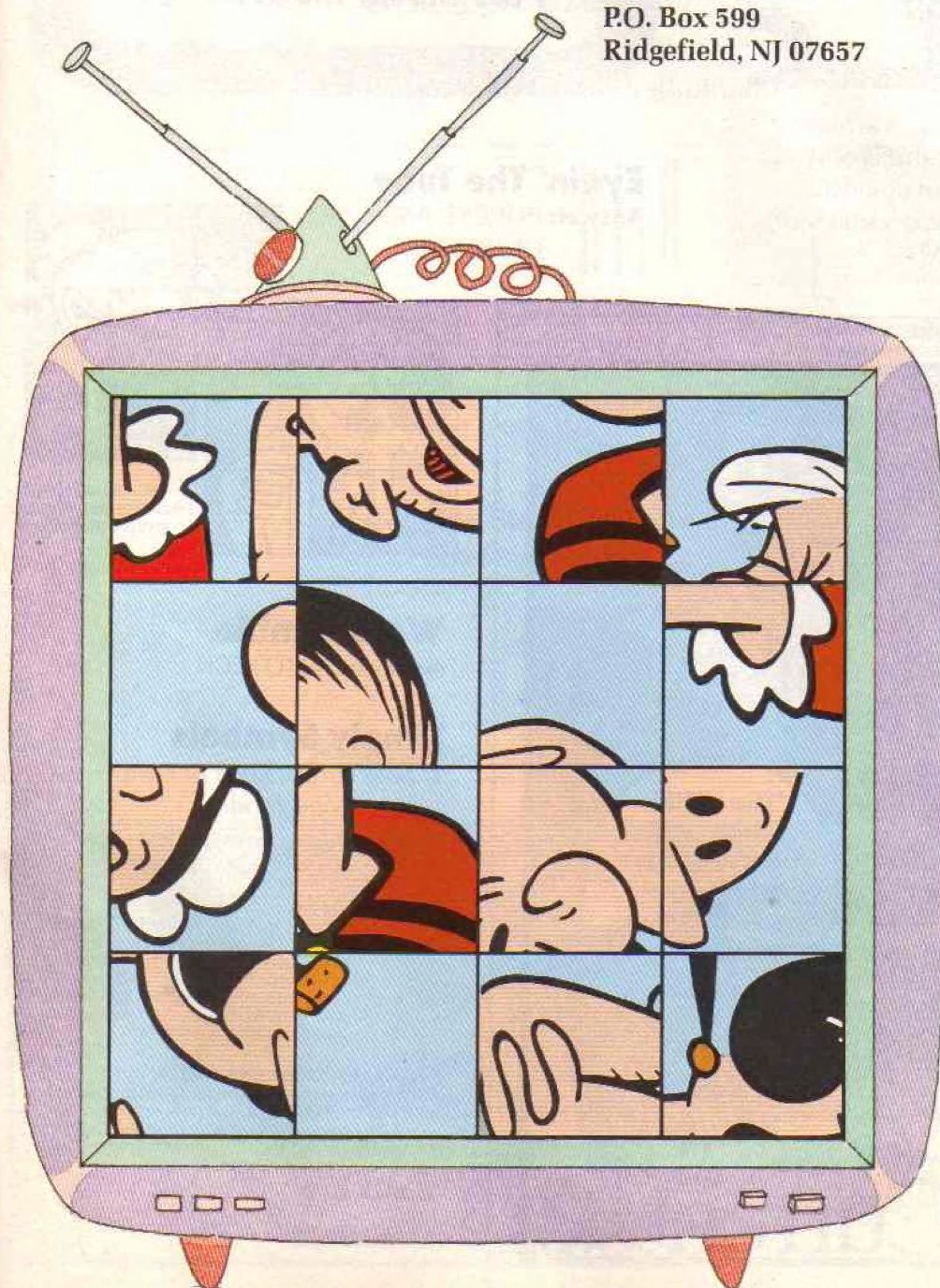
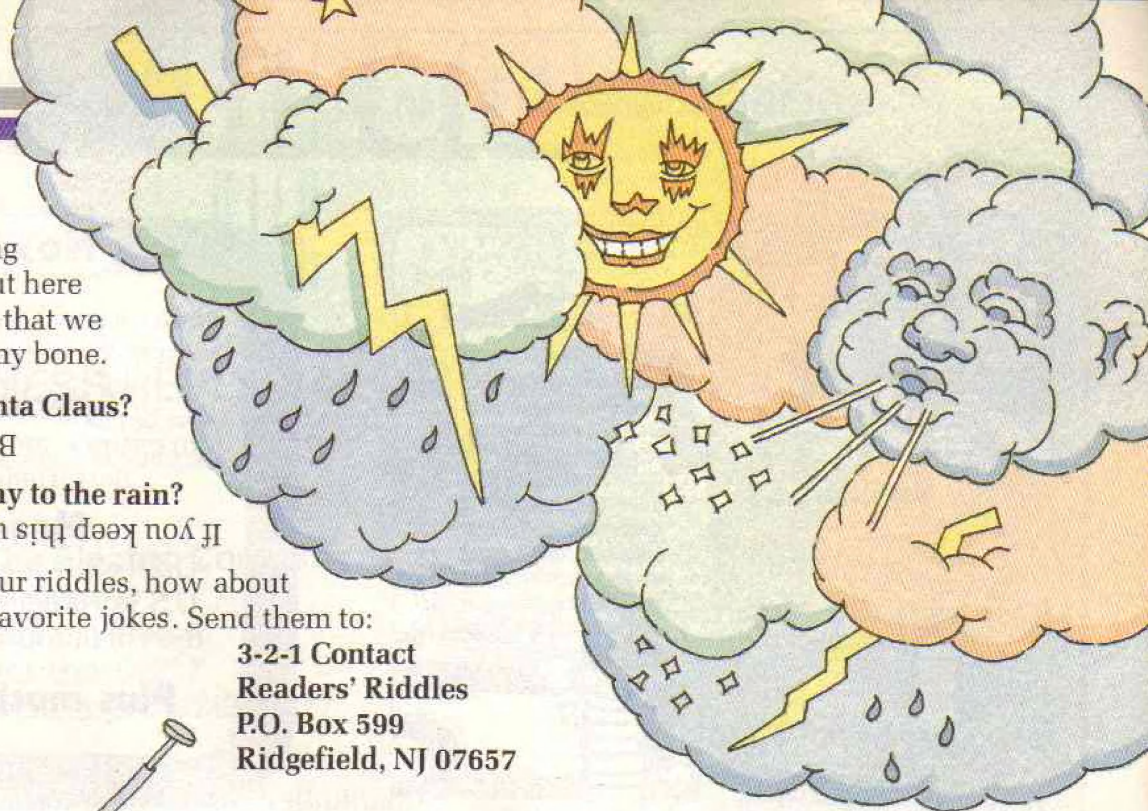
Lightning is no laughing matter—that's for sure. But here are some weather riddles that we hope will tickle your funny bone.

Why is a cloud like Santa Claus?
Because it holds rain, dear.

What did the ground say to the rain?
If you keep this up, my name will be mud.

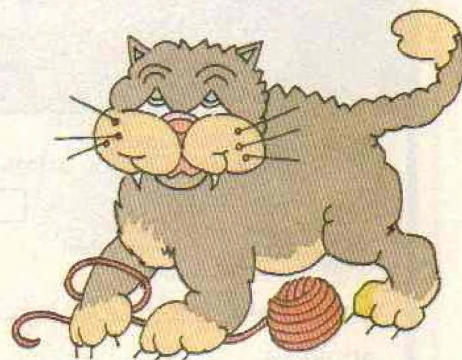
Now that you've read our riddles, how about sending us some of your favorite jokes. Send them to:

3-2-1 Contact
Readers' Riddles
P.O. Box 599
Ridgefield, NJ 07657



Eyein' the Tube

Here's a TV puzzle that will really take some eyeballing. Can you find two popular cartoon stars in this jumbled-up screen? **Answers on the Did It! page.**



Did It!

ILLUSTRATION BY KIMBLE MEAD



Hi-Tech Transit Hurray for all you cartoon creators out there! We received hundreds of wonderful entries for the Hi-Tech Transit contest. (ENTER section, July/Aug. 1985). Here's one sent in by **Jonathan Dakss** of Sudbury, MA.

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Next Month!

Here's a sneak peek at what you'll find in next month's 3-2-1 CONTACT.

Special Pet Issue

An entire issue devoted to everyone's best friends: pet animals.

Meet Jackpot

This beagle is a special agent for the U.S. government. Find out what he does in our feature about a dog's life.

Plus much, much more.

Eyein' The Tube

Answer: POPEYE AND OLIVE OYL



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Word Jumble

Answer: DISKOTECH

Simply Symbols

1. Safe camp, kind person, very good food
2. Danger, be quiet, fierce dog

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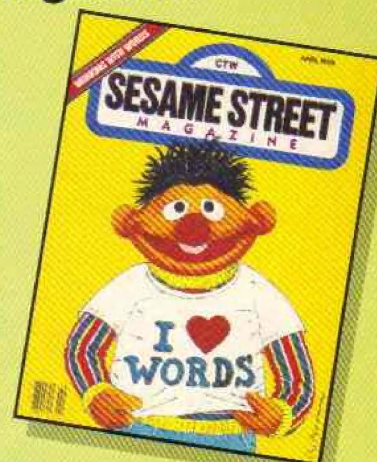
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